Plant Species Status Summaries

Prepared For:

Bureau of Land Management
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We are grateful to all Bureau of Land Management staff in Montana who have supported studies of special status plant species over the years. Information in this report draws from the compiled research results, insights and observations of Montana Natural Heritage Program botanists, Peter Lesica, and Forest Service botanists to produce a statewide synthesis of information on these species.

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PURPOSE

The purpose of this study is to compile state-wide status information for each Bureau of Land Management (BLM) special status plant species as recognized by the Montana State Office of BLM (1996). Included in this set of species are a few Montana plant species of special concern documented for the first time on BLM-administered lands since the 1996 list was released; for a total of 129 state status summaries. Thirty-two of these species are potentially imperiled or vulnerable rangewide (G1-G3G4), for which a separate rangewide status summary is also prepared.

Information on seven criteria pertaining to rarity, threats, and vulnerability is written and "scored" for each species, providing a written record and visual overview in the printed report. This includes a wide range of factors that are typically studied in making status determinations, compatible with if not broader than the standards used in defining sensitive and watch species on the current BLM list (BLM 1996):

Sensitive - A taxon that merits protection because it has been:

(1) Properly studied in the opinion of the District Manager, and
(2) Proven to be imperiled in at least part of its range; and
(3) Documented to occur on BLM surface.

Watch - A taxon that needs more study in the opinion of the District Manager because it is either:
(1) Known to be imperiled and is suspected to occur on BLM surface or,
(2) Suspected to be imperiled and has been documented on BLM surface, or
(3) Needs further study for other reasons.

Standards for evaluating status and imperilment are to be developed and documented if the process and the resulting list are to be objective, rigorous and kept current as new information becomes available.

The methods and results in this study are aimed at producing a concise reference, synthesizing the work of many people. The results are no more and no less than a set of tools for BLM use.

METHODS

The seven criteria pertaining to rarity, threats, and vulnerability are "scored" and pertinent information is described for each species. All of the information is compiled in an existing database, one of the linked databases in the Biological Conservation Database (BCD). It can be used for searching and sorting data, maintaining an ongoing body of status information, and for presenting status information in customized reports with other biodiversity information. The factors include:

Rarity considerations
(1) Number of occurrences , i.e., discrete places where populations of the species are found
(2) Abundance
(3) Range of the species in the state

Threats and vulnerability considerations
(4) Ecological amplitude, i.e., range of habitats and extent of habitat where it is found
(5) Trend
(6) Threats
(7) Protection

Any other extenuating circumstances that affect species status are identified as "other considerations." Finally, the available status information is reviewed to identify, at least in preliminary manner, the inventory, protection and management needs of each species.

The process, standards, and formatting used in compiling and presenting this information are consistent with original ones developed by The Nature Conservancy, used in other states and provinces. The "ecological amplitude" factor is an addition that we made to existing data fields, which were otherwise refined and standardized

for the express purpose of this project. Each of the seven ranking factors as categories for "scoring" and accompanying definitions and discussions.

(1) Number of Occurrences - the number of element occurrences for the species in the state.

A = 0 - 5
B = 6 - 20
C = 21 - 100
D = 101+

Herbarium collection records and field survey documents are the basis for determining the number of element occurrences. As a general rule, historic records (over 50 years old) are not included in the tally. Comments are provided on actual numbers, degree of confidence, and how extensively occurrences of the species have been sought. In some cases, we reviewed and edited occurrence data and merged records, as in the case of multiple occurrences clustered in a small area. These provisions and any interpretation questions are noted.

(2) Abundance - the abundance of the species in the state.

A = Fewer than 1,000 individuals
Fewer than 2,000 acres
Fewer than 10 miles of stream length

B = 1,000 - 3,000 individuals
2,000 - 10,000 acres
10 - 50 miles

C = 3,000 - 10,000 individuals
10,000 - 50,000 acres
50 - 250 miles

D = over 10,000 individuals
over 50,000 acres

The total number of individuals is a primary consideration in determining plant species' status. The total surface area extent of a species is used to augment of supplant estimates of the total number of plants for species that are highly restricted or for which a census is problematic. For example, some species are clone-forming plants, annuals that fluctuate widely in numbers from year-to-year, or perennial plants that do not regularly produce flowers or other above-ground shoots each year.

(3) Range - the present range of the species in the state, usually a tally of the number of counties where it occurs.

A = Very small range, less than 3% of state territory.

B = Narrow range, less than 10% of state territory.

C = Moderately widespread, less than half of state territory.

D = Widespread, more than half of state territory.

Shifts in rank are considered when the counties in which it occurs are contiguous or remote.

(4) Ecological amplitude - the degree to which a species is restricted to a narrow range of habitat conditions.

A = Highly habitat-specific; with extreme fidelity to a narrow range of habitat defined by habitat attributes or necessary processes; or life history attributes as they relate to habitat and process

B = Moderately habitat-specific; with high fidelity to an occasional habitat or moderate fidelity to rare habitats

C = Low habitat specificity; with moderate fidelity to common habitats

D = Habitat generalist

U = Unknown

This seventh factor was added to present a more complete picture of potential risk since many of Montana's rare species are not under imminent threat. We called this "Ecological Amplitude" to reflect species' habitat specific-

ity. Thus, a species with very narrow ecological amplitude but relatively wide state distribution may be considered a species of special concern. We noted any information on whether species' are restricted to vulnerable habitats, but did not try to address habitat vulnerability, often referred to as "fragility," and all of the ambiguities in characterizing "fragility." For example, peatland habitats are generally very small, discrete habitats; representing narrow ecological amplitude. Many factors contribute to the stability or fragility of this habitat and while peatland water chemistry is highly buffered, the groundwater hydrology system may or may not be highly vulnerable to drastic changes. The habitat information presented in the field guide is highlighted for this purpose and generalizations made about potential habitat.

(5) Trend - the overall trend in the species' distribution over its state range.

A = Declining rapidly

B = Declining

C = Stable

D = Increasing

Considerations included known extirpation, monitoring results, observations, and qualified inference based on lack of current records within its historic range. Many species have little or no trend information available.

(6) Protection - the number of protected occurrences of the species in the state.

A = Believed to be none protected.

B = At least one protected EO.

C = Several protected EOs.

D = Many protected EOs.

U = Unknown whether any protected.

It was recorded whether the species is on public or private land, whether it was on highly-protected public land sites (e.g., ACECs, RNAs, wilderness areas), and whether the species itself is recognized by land-managing public agencies as a species of concern. It is difficult to apply this consistently, for example, in the case of species have de facto protection in the remoteness of their habitat under current conditions.

(7) Threats - the degree to which the species is directly or indirectly threatened.

A = Very threatened in the state; species or community directly exploited or threatened by natural or man-made forces.

B = Moderately threatened state-wide; habitat or community lends itself to alternate use.

C = Not very threatened state-wide; self-protecting by unsuitability for other uses.

D = Unthreatened on a state-wide basis, although it may be threatened in minor portions of the state.

Threats include habitat conversion, direct exploitation of the species, influence of disease, or successional habitat changes. Actual threats or land use practices potentially affecting the species are distinguished from long-term threats, and direct threats from indirect threats. This information is very sketchy for many species, and depends heavily on the observations of botanists familiar with land use practices in different areas of the state.

RESULTS AND DISCUSSION

The status of each of the 129 species under consideration is profiled in the following pages, arranged alphabetically by scientific name. The written evaluation is reproduced in full, and a visual overview using the ranking scores is presented in the upper righthand corner. The 32 species among them that are

potentially globally rare are presented first, and addressed as a separate subset. Their rangewide status summary is shown on the left across from their state status summary, to view both scales of analysis at once.

At the end of the information on all species, a summary table is provided with initial status recommendations at the urging of BLM. We offer and apply a provisional set of definitions for BLM "sensitive" and "watch" status; subject to critical review and decision by BLM.

Sensitive:
1. Globally rare species (G1-G3) that face any threats (A-C) or downward trends (A-C) are defined as "sensitive."
2. For globally rare species, in cases where threats and trends are unknown, but the species is still considered highly vulnerable in terms of its rarity (numbers of occurrences, abundance, or range = A), the species is also treated as a sensitive species.
3. State rare species (G3G4-G5) that are imminently threatened (A) also fit the definition.

Watch:
1. Globally rare species that are vulnerable (number of occurrences, abundance or range = B) but with no identifiable threats or downward trends fit the definition of "watch."
2. State rare species that are potentially threatened (B) or declining (B) also fit the definition.
3. For state rare species, in cases where threats and trends are unknown, but the species is still considered vulnerable in terms of its rarity (numbers of occurrences, abundance, or range = A or B), the species is also treated as a watch species.

Initial status recommendations are presented for BLM review in keeping with the initial BLM definitions of special status species in Montana and these standards (Table 1).

To apply this tool effectively, the BLM might consider only species known on BLM-administered lands for sensitive and watch status. While baseline information has not been collected over many areas, list conciseness and applicability has immediate benefit. It may be more important to have a list with a process for reviewing and updating it, than an unwieldy list.

Toward this end, it would be helpful to present a single BLM list for Montana, cross-referenced by field offices to show the species in common; rather than posting separate lists.

The definitions above place considerable emphasis on two criteria: threats and trends. Thorough information is lacking in this regard for most species. The Montana Natural Heritage Program conducts annual list reviews and is seeking concerted input on species' threats, trends and vulnerability when the 2000 list is circulated for review next year. The review results will be incorporated for BLM species, and may modify the status summaries presented in this report.

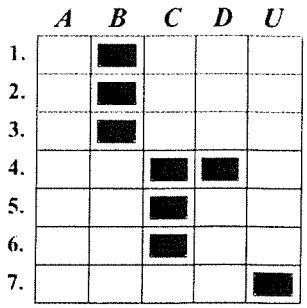
Other factors that the BLM may want to consider include rangewide rarity (as indicated by GRANK), extent of this species in Montana relative to its rangewide distribution (as indicated by comparing GRANK with SRANK), and extent of this species in Montana on BLM lands as compared to all other lands. The latter information is presented in the Montana Rare Plant Field Guide.

LITERATURE CITED

Bureau of Land Management, Montana State Office. 1996. BLM 6840 Manual - Special Status Species Management, release 6-4 of 04/08/96.

AGASTACHE CUSICKII

Cusick's Horse-mint



GLOBAL STATUS SUMMARY

Global Rank: **G3G4**

Rare throughout its range; limited habitat.

Rarity:

1. *Number of Occurrences:*

4 EOs in Montana, unknown number of EOs in Oregon, unknown number of EOs in Idaho and less than 20 EOs in Nevada.

2. *Abundance:*

Considered rare throughout its range, though locally common at some sites. Occupies less than 100 acres in Montana, representing over 2,000 individuals.

3. *Global Range:*

Harney & Malheur Cos., Oregon and at scattered locations in the mountains of central Idaho, northern and central Nevada, southwesternmost Montana, and possibly northeastern California; in Steens, Santa Rosa, White Pine, and Toiyabe Mountains of Nevada.

Threats and Vulnerability:

4. *Fragility:*

Harsh environment, not regularly susceptible to successional change or exotic invasions.

5. *Trend:*

Largest population in Montana has diminished with mass wasting of slopes above gravel quarry.

6. *Threats:*

Grazing, gravel removal, slope-destabilizing road maintenance, collection by rock gardeners or possibly recreationists, and mining activities are potential localizedthreats in part of range. Occurs in remote habitat above 10,000 in Toiyabee Range of Nevada.

7. *Protection:*

Oregon habitat is managed by BLM, Montana habitat is managed by BLM or USFS, Nevada habitat is managed by USFS.

Needs:

8. *Inventory:*

Need rank from n. California and Idaho. Conduct surveys in OR and Montana on a project basis.

9. *Protection:*

To be identified through inventory and stewardship tasks.

10. *Management:*

Monitor population being destabilized by unauthorized quarrying and identify necessary actions. Alert agencies of species status rank and EOs.

11. *Research:*

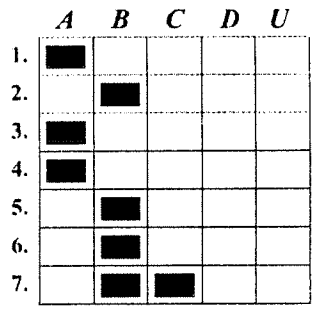
Status review is needed incorporating information from Idaho and California. Any supporting information for the 3C designation is to be incorporated.

Other Considerations:

Federal category 3C.

AGASTACHE CUSICKII

Cusick's Horse-mint



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs all in Tendoy Range, potentially threatened by unauthorized quarrying, and by slope-destabilizing road maintenance.

Rarity:

1. ***Number of Occurrences:***

There are 4 occurrences.

2. ***Abundance:***

Total number of individuals is conservatively estimated greater than 2,000. Known occupied habitat is less than 100 acres.

3. ***Range in Montana:***

It is a peripheral species known from Beaverhead County, restricted to a very small range in the Tendoy Mountains.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

The species has a very narrow ecological amplitude with high fidelity to an uncommon habitat, as conditioned by aspect, lithology, and gravel size.

5. ***Trend:***

Habitat area of the largest population has been reduced by unregulated gravel mining. Population and habitat monitoring were initiated for the site in 1993. Short term results documented an increase in aerial stems corresponding with a wet year, and continued mass wasting of slopes above the gravel quarries.

6. ***Threats:***

Illicit gravel mining and routine road maintenance continue to potentially threaten the largest occurrence. Others are more remote and are not threatened by current land uses.

7. ***Protection:***

All occurrences are on public lands with sensitive species policies in place or proposed.

Needs:

8. ***Inventory:***

Project clearance inventories are needed in the Tendoy and possibly Beaverhead Mtns.

9. ***Protection:***

At least 1 in Montana.

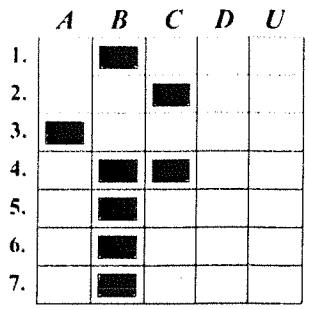
10. ***Management:***

Monitor EO #001 and illegal quarrying activity.

Other Considerations:

ARABIS FECUNDA

Sapphire Rockcress



GLOBAL STATUS SUMMARY

Global Rank: G2

An edaphically restricted Montana endemic known from 20 occurrences in a small geographic area. A large part of this species' habitat is threatened by spotted knapweed (Centaurea maculosa), an aggressive, introduced weed.

Rarity:

1. *Number of Occurrences:*

Twenty known occurrences.

2. *Abundance:*

Six populations contain 10,000+ plants, though the species is short-lived may occupy less than 2,000 acres.

3. *Global Range:*

State endemic, restricted to Ravalli, Beaverhead, and Silver Bow counties, Montana.

Threats and Vulnerability:

4. *Fragility:*

The dry, rocky habitat is relatively resilient, though erodible under heavy disturbance. The microhabitat conditions critical to seedbank storage and recruitment may be more fragile.

5. *Trend:*

Downward trend is inferred at most Ravalli County sites due to knapweed invasion. The ubiquitous grazing and the presence of cryptogamic crusts have mixed affects depending on setting and extent. Over the long term, livestock grazing will probably be detrimental because, in addition to trampling plants, livestock are also significant vectors for exotic weed encroachment.

6. *Threats:*

Habitat is threatened by grazing, and by invasion of spotted knapweed (Centaurea maculosa), in Ravalli County.

7. *Protection:*

A portion of one occurrence (Charleys Gulch) has been registered with TNC. It was subsequently reported as threatened by logging access - impacts are unknown.

Needs:

8. *Inventory:*

Additional surveys needed in the Pioneer Mountains.

9. *Protection:*

Protect at least two EOs, one in each major portion of the range.

10. *Management:*

Determine species' response to herbicides for knapweed and develop integrated pest management at all Ravalli Co. populations that are/were made up of 10,000+ plants. Address species' management as part of allotment and travel management planning for all

11. *Research:*

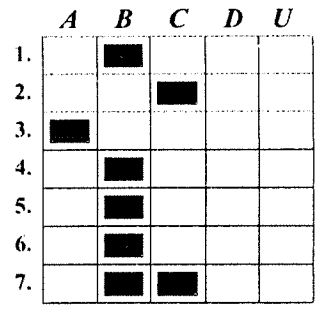
It is necessary to know the genetic differentiation within/between the two population clusters, the threatened Ravalli County populations vs. the unthreatened populations in Beaverhead and Silver Bow counties, in order to determine whether ARABIS

Other Considerations:

State endemic.

ARABIS FECUNDA

Sapphire Rockcress



STATE STATUS SUMMARY

State Rank: **S2**

State endemic with 20 EOs; threatened by spotted knapweed in Ravalli Co. and potentially affected by mining and grazing elsewhere

Rarity:

1. *Number of Occurrences:*

There are 20 occurrences.

2. *Abundance:*

Total individuals is conservatively estimated greater than 80,000. Total occupied habitat is about 1800 acres.

3. *Range in Montana:*

It is a state endemic species, known from Beaverhead, Ravalli, and Silver Bow counties. There are occurrences in the Pioneer, Sapphire, and Highland mountains.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a variety of sparsely vegetated community types across a relatively broad elevational range, but it is confined to uncommon geological substrates. Habitat in Ravalli County contrasts in many respects with that in other counties.

5. *Trend:*

The species is believed declining in Ravalli County due to invasions of its habitat by spotted knapweed, which have been fostered by historical overgrazing.

6. *Threats:*

The species is threatened by competition from spotted knapweed in Ravalli County, and spread of this weed is a potential future threat to other occurrences. Activities which promote weed spread (livestock grazing, mining, vehicle travel) are the primary indirect threats. Initial genetic studies indicated that the highly threatened Bitterroot populations may be more significant genetically.

7. *Protection:*

Most occurrences including several large populations are on public lands with sensitive species policies in place, however, all Ravalli County occurrences are on private or state land.

Needs:

8. *Inventory:*

Additional inventory is needed in the Pioneer Mts.; and surveys near documented occurrences in the course of project clearance.

9. *Protection:*

At least 2 EOs, in Bitterroot Valley and in Beaverhead Co. Evaluate the relative genetic significance of these 2 areas.

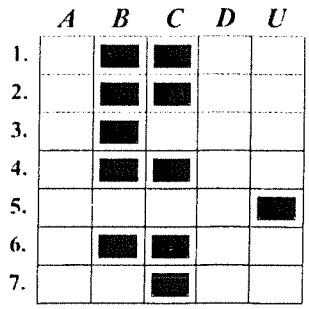
10. *Management:*

Knapweed control in Bitterroot Valley populations is needed.

Other Considerations:

ASTRAGALUS BARRII

Barr's Milkvetch



STATE STATUS SUMMARY

State Rank: **S3**

Regional endemic with 32 occurrences; and prospective declines among at least some of the Ashland District EOs; potentially threatened by mining and other development.

Rarity:

1. *Number of Occurrences:*

There are 32 occurrences, including a couple that had only vegetative plants making identification tentative. Occurrences are concentrated in few areas.

2. *Abundance:*

There is an estimated total of over 25,000 individuals but known occupied habitat may be less than 500 acres.

3. *Range in Montana:*

It is a regional endemic species known from Bighorn, Carter, Powder River and Rosebud counties. The Carter County distribution is based on a single historical collection.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is restricted to eroding landforms with barren substrates derived from a range of parent materials including sandstone, siltstone, shale, and limestone. These features are repeated across the landscape throughout the species range.

5. *Trend:*

Strip mining for coal may have eliminated some habitat occupied by the species in the past. Death of many plants due to drought was observed in 1989, but long term trends are unknown.

6. *Threats:*

Surrounding habitat of many occurrences is grazed, but the species is probably resistant to damage by grazing due to its low habit. Some occurrences are potentially threatened by mining. Oil drilling appeared to have little effect, and the potential for gas drilling and impacts are unknown.

7. *Protection:*

Many occurrences, including some large populations, are on public lands with sensitive species policies in place.

Needs:

8. *Inventory:*

Survey vegetative occurrences during flowering time of both A. barrii and A. hyalinus to make determination. Evaluate trend at the few occurrences with 1,000+ plants. activities.

9. *Protection:*

At least 2, to preserve species in plains and pineland settings of Montana.

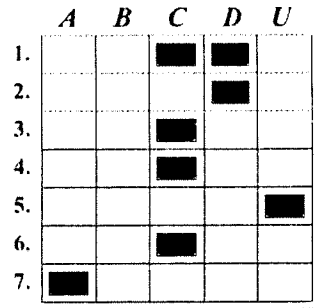
10. *Management:*

Get information from WY on potential gas drilling impacts and from land-managing agencies on potential exotic species problems.

Other Considerations:

ASTRAGALUS BARRII

Barr's Milkvetch



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Regional endemic with ca. 100 occurrences; new coalbed methane threats warrant consideration. May require "semi-natural matrix" landscape.

Rarity:

1. *Number of Occurrences:*

34 extant and 1 historic EOs in Wyoming, 30 extant and 1 historic EOs in MT, similar numbers is South Dakota.

2. *Abundance:*

There is an estimated total of over 30,000 individuals in Montana but known occupied habitat may be less than a square mile. Wyoming populations surveyed by Marriott (1992) ranged in size from several hundred to over 10,000 individuals for a total of over 100,000.

3. *Global Range:*

3-state junction area including sw. South Dakota, seven counties in ne. Wyoming, and four counties in se. Montana. Regional endemic.

Threats and Vulnerability:

4. *Fragility:*

It is restricted to barren outcrops on ridges and hills derived from fine parent materials; representing harsh, localized habitats on the landscape.

5. *Trend:*

Most populations appear to be stable. Loss of habitat to coal strip mining, and death of plants to 1980s drought has been reported but magnitude and long-term trend of the latter have not been assessed. Oil development has been intense in part of its habitat but there is little evidence of direct impact to the species.

6. *Threats:*

Overall, many populations are not threatened. Specific populations may be threatened by expansion of coal mining, and future oil and gas development, including coalbed methane. In South Dakota, zeolite mining and off-road vehicle impact are considered threats (Dave Ode, pers. comm. to H. Marriott, 1992). occurrences. Coalbed methane development warrants consideration. Noxious weed threats are low.

7. *Protection:*

Many occurrences are on federal lands with sensitive species policies in place. None have special protection status.

Needs:

8. *Inventory:*

Survey the two large vegetative populations on Custer NF to verify as A. BARRII rather than A. HYALINUS. Consider impacts of coalbed methane development. Not all populations have been adequately or recently inventoried.

9. *Protection:*

Representative pinelands and plains populations throughout range.

10. *Management:*

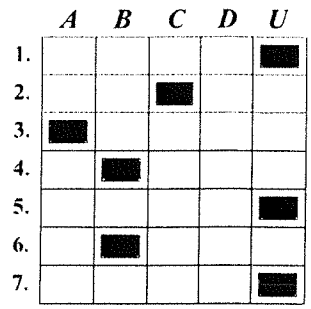
Management in "semi-natural matrix" lands may be critical for the long-term survival of the species.

11. *Research:*

Other Considerations:

ASTRAGALUS CERAMICUS VAR APUS

Painted Milkvetch



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Highly restricted in distribution and sand dune habitat, though abundant in Idaho populations.

Rarity:

1. ***Number of Occurrences:***

1 occurrence in Montana; not tracked in Idaho.

2. ***Abundance:***

App. 700 acres of habitat in Montana; probably less than 50,000 acres of habitat in Idaho.

3. ***Global Range:***

Se. Idaho and extreme sw. Montana. Regional endemic.

Threats and Vulnerability:

4. ***Fragility:***

While it occupies harsh, early-succession habitat, it is highly susceptible to decline in absence of some disturbance.

5. ***Trend:***

It is a short-lived perennial and its population numbers are known to fluctuate greatly over short periods of time; long-term trend unknown.

6. ***Threats:***

It is potentially threatened by off-road vehicles, intense livestock grazing, or advanced dune succession in the absence of disturbance.

7. ***Protection:***

Part of the Montana EO is on federal land with sensitive species policies in place but this does not ensure protection.

Needs:

8. ***Inventory:***

Survey as part of project work throughout range.

9. ***Protection:***

Protect the only occurrence in Montana.

10. ***Management:***

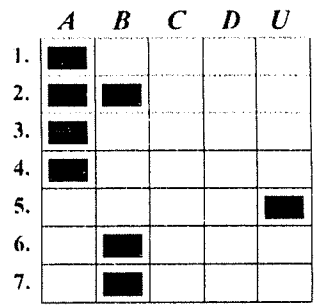
Adaptive management framework for maintaining populations in high and low topographic relief settings under prescribed fire, grazing, and accompanying pocket gopher activity is spelled out in Lesica and Cooper (1999).

11. ***Research:***

Other Considerations:

ASTRAGALUS CERAMICUS VAR APUS

Painted Milkvetch



STATE STATUS SUMMARY

State Rank: **S1**

1 known EO; species is susceptible to unfavorable conditions over consecutive years, and sand dune habitat is potentially threatened.

Rarity:

1. *Number of Occurrences:*

There is only 1 occurrence.

2. *Abundance:*

The occurrence is a large population with several subpopulations occupying ca. 700 acres of habitat.

3. *Range in Montana:*

It is a regional endemic known from Beaverhead County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is restricted to low competition microsites within localized sand dune habitat.

5. *Trend:*

Long term trends are unknown. It is a short-lived perennial and its population numbers are known to fluctuate greatly over short periods of time. It is an early succession species that declines under complete destabilization or stabilization.

6. *Threats:*

Habitat is potentially threatened by disturbance from off-road vehicles and livestock grazing.

7. *Protection:*

The occurrence is partly on public lands with sensitive species policies in place, but this may not insure its long term viability. Other parts of the occurrence are on private and public lands without sensitive species policies in place.

Needs:

8. *Inventory:*

Survey as part of project work in Centennial Sandhills.

9. *Protection:*

At least 1, to preserve species in Montana.

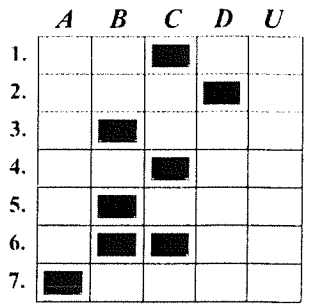
10. *Management:*

Requires early succession habitat; see Lesica and Cooper (1998) for a discussion of conceptual management models involving fire and grazing.

Other Considerations:

ASTRAGALUS SCAPHOIDES

Bitterroot Milkvetch



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Limited geographic distribution and vulnerable under some grazing management practices.

Rarity:

1. ***Number of Occurrences:***

30 EOs in ID (Lesica and Elliott, 1987); 16 recent and 1 historical EOs in MT (1999).

2. ***Abundance:***

Several populations in Idaho have more than 5000 plants.

3. ***Global Range:***

Beaverhead Co., MT, and Lemhi Co., ID.

Threats and Vulnerability:

4. ***Fragility:***

Occurs in common steppe community types but within relatively limited elevation range perhaps controlled by climate.

5. ***Trend:***

Likely declining under incompatible grazing management in parts of range.

6. ***Threats:***

Species declines under rotation grazing without rest cycle, or under heavy grazing.

7. ***Protection:***

Believed to be none protected, though most occurrences are on public lands with sensitive species policies in place.

Needs:

8. ***Inventory:***

Inventory on a project basis.

9. ***Protection:***

Protect at least 1 large population in both watersheds.

10. ***Management:***

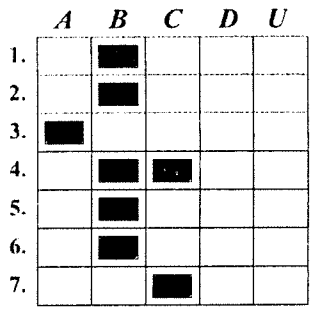
Rest rotation grazing is documented as promoting population viability.

11. ***Research:***

Other Considerations:

ASTRAGALUS SCAPHOIDES

Bitterroot Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 17 EOs; species is threatened under some but not all grazing regimes.

Rarity:

1. *Number of Occurrences:*

There are 17 occurrences, all but one surveyed in the 1980's or 1990's.

2. *Abundance:*

Total observed individuals is conservatively estimated to be greater than 28,000, but currently occupied habitat may be less than 700 acres.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead County, confined to a small range from the Grasshopper Creek drainage south to the Tendoy Mountains.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a few rather common plant community types spanning various geological substrates, but is restricted to a relatively narrow elevational range.

5. *Trend:*

The species is palatable and declines under some but not all grazing regimes including repeated season-long and early-pasture grazing. Flowering numbers vary greatly between years due to climate and may be misinterpreted as population changes.

6. *Threats:*

The species is threatened by heavy spring grazing of its habitat and by weed invasions at some sites.

7. *Protection:*

Almost all known occurrences are on public lands with sensitive species policies in place, however, this may not insure long term viability of all occurrences under current grazing regimes.

Needs:

8. *Inventory:*

Additional field surveys within the range of the species.

9. *Protection:*

Protect at least 1 large population or several small populations to prevent loss of genetic diversity.

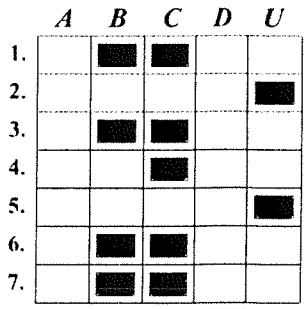
10. *Management:*

Mature plants are vulnerable and populations decline under grazing without rest rotation.

Other Considerations:

ASTRAGALUS TERMINALIS

Railhead Milkvetch



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Geographically restricted, and potentially threatened at low elevations.

Rarity:

1. ***Number of Occurrences:***

11 extant and 3 historical occurrences in Montana, 5 extant and 2 historical occurrences in Wyoming, undetermined number in Idaho.

2. ***Abundance:***

Total individuals are estimated to be greater than 10,000 in Montana, but occupied habitat may be less than a few hundred acres. In Wyoming, the species appears to be restricted to narrow corridors of river cobblestone habitat; Shaw (1976) refers to Grand Teton NP populations as "common."

3. ***Global Range:***

East-central Idaho, sw. Montana in Beaverhead and Madison cos., south to nw. Wyoming. Regional endemic.

Threats and Vulnerability:

4. ***Fragility:***

The species occurs in relatively common steppe and grassland community types and spans a broad elevation range in Montana; restricted to low elevation riparian habitat in Wyoming.

5. ***Trend:***

Trend data are lacking, but populations appear to be stable.

6. ***Threats:***

The species is threatened by grazing, subdivision, and weed invasion in some of the low elevation populations in Montana, and potentially by gravel quarrying in Wyoming.

7. ***Protection:***

At least 4 occurrences in Wyoming are found in Grand Teton National Park or the National Elk Refuge; others are on federal lands with sensitive species policies in place but none are protected.

Needs:

8. ***Inventory:***

Need rank from Idaho. Better census data and more systematic surveys are needed in Montana and Wyoming.

9. ***Protection:***

Address both high and low elevation population protection needs, and full suite of habitats.

10. ***Management:***

Aggresively control knapweed at Madison Co., Montana occurrences.

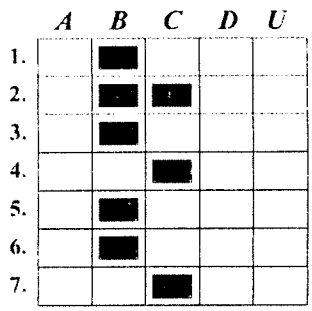
11. ***Research:***

Other Considerations:

The distinctions between species' habitats in Montana and Wyoming suggest that the full range of species' habitat has not been searched throughout its range, or that there is a marked niche differentiation, possibly reflecting genetic differences.

ASTRAGALUS TERMINALIS

Railhead Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

14 EOs including considerable range in elevation; potentially threatened by grazing and noxious weeds in at least the low elevation occurrences

Rarity:

1. ***Number of Occurrences:***

There are 14 occurrences. Three are known only by historic collections without precise location data, and may be extirpated or merit merging with other occurrences.

2. ***Abundance:***

Total individuals is estimated to be greater than 10,000, but occupied habitat may be less than a few hundred acres.

3. ***Range in Montana:***

It is a regional endemic species known from Beaverhead and Madison Counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

The species occurs in a few relatively common community types, and spans a variety of lithologies and a broad elevational range.

5. ***Trend:***

The species negative response to grazing under some conditions is evidence of population declines at some sites.

6. ***Threats:***

The species is potentially threatened by grazing under some conditions and by weed invasions at some sites.

7. ***Protection:***

Several occurrences are on public lands with sensitive species policies in place, however, this may not insure their long term viability. A couple occurrences are within the Red Rock Lakes Wilderness Area and Wildlife Refuge.

Needs:

8. ***Inventory:***

Survey is needed in the Centennial and Gravelly Mountains.

9. ***Protection:***

Consider low elevation and high elevation occurrences separately.

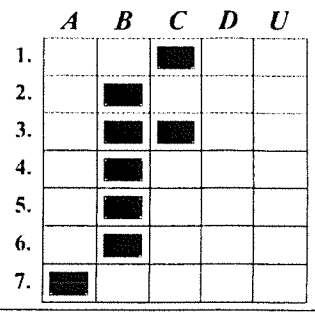
10. ***Management:***

Knapweed control is needed for Madison County occurrences.

Other Considerations:

CAREX PARRYANA SSP IDAHOA

Idaho Sedge



GLOBAL STATUS SUMMARY

Global Rank: **G5T2**

Regional endemic vulnerable to overgrazing.

Rarity:

1. *Number of Occurrences:*

33 extant EOs and five that are historic in Montana; 4 extant and one historic EO in Idaho.

2. *Abundance:*

An estimated total of 44,000 stems have been observed in Montana, probably much greater than the number of genetic individuals because it is spread by rhizomes and has predominantly asexual seed production. Known habitat is 200 acres or less.

3. *Global Range:*

Southwest Montana and adjacent Idaho; specimens also verified by Murray for FNA that extend the range to Oregon and Utah. Regional endemic.

Threats and Vulnerability:

4. *Fragility:*

Occupies wet meadow habitat that is readily altered.

5. *Trend:*

Likely to have declined in degraded range.

6. *Threats:*

Threatened by heavy grazing, trampling, and accompanying Poa pratensis invasion; also potentially affected by haying, mining, and road developments.

7. *Protection:*

Most known occurrences are on public lands, and the species is on agency sensitive species lists.

Needs:

8. *Inventory:*

Conduct baseline survey and status review in Oregon and Utah, and survey for populations on private land in Montana and Idaho.

9. *Protection:*

At least one in each state.

10. *Management:*

Maintain and improve riparian vegetation cover, and ensure that riparian areas are in proper functioning condition with high vigor for riparian plants.

11. *Research:*

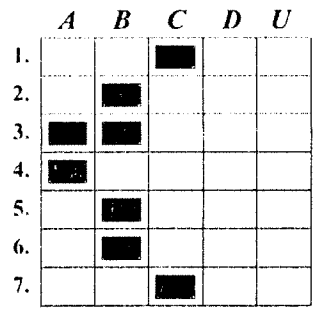
Determine optimum grazing regimes for species conservation and evaluate effects of haying.

Other Considerations:

Treated in draft FNA text as a variety of Carex parryana; warranting GRANK revision to G5T2.

CAREX PARRYANA SSP IDAHOA

Idaho Sedge



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 38 EOs; potentially threatened by grazing

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Rarity:

1. *Number of Occurrences:*

There are 38 occurrences, including five that are historic.

2. *Abundance:*

An estimated total of 44,000+ stems have been observed, however, number of genetic individuals is probably much less due to spread by rhizomes and predominantly asexual seed production. Known occupied habitat is about 200 acres or less.

3. *Range in Montana:*

It is a regional endemic recently known from Beaverhead, Madison, and Silver Bow counties, and historically known from Gallatin and Powell counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with high fidelity to wetland/upland ecotone habitat which is usually highly restricted in area and vulnerable to impacts from cattle grazing.

5. *Trend:*

It is highly probable that there have been declines or local extirpation in some locations due to heavy grazing, road building, and possibly haying on private lands.

6. *Threats:*

The species is palatable and is potentially threatened by heavy grazing. Habitat is potentially threatened by invasions of exotic weeds and by alterations in hydrology caused by grazing, road construction, or water development.

7. *Protection:*

Most occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

Survey for populations on private land.

9. *Protection:*

1 representative occurrence.

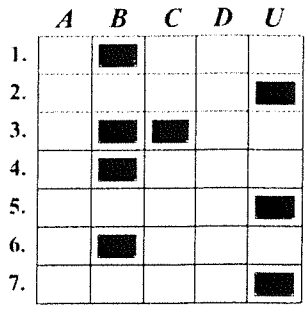
10. *Management:*

Determine optimal grazing regime for species conservation and evaluate effects of haying. Maintain and improve riparian vegetation cover, and ensure that riparian areas are in proper functioning condition with high riparian plant vigor.

Other Considerations:

CASTILLEJA GRACILLIMA

Slender Indian Paintbrush



GLOBAL STATUS SUMMARY

Global Rank: **G3G4**

Limited geographic distribution.

Rarity:

1. ***Number of Occurrences:***

There are 12 occurrences in Montana, but 2 are dubious and 2 are historic; the numbers of EOs in Idaho, Wyoming and British Columbia are unknown.

2. ***Abundance:***

The total estimate of flowering stems in Montana is between 1,500-10,000, with two occurrences having more than 1,000 stems. Number of genets is probably much less due to rhizomatous spread. Total known occupied habitat is less than acres.

3. ***Global Range:***

Nw. Wyoming and adjacent Montana to central Idaho. Most British Columbia occurrences are in the Kootenai River valley contiguous with n. Idaho and nw. Montana, yet the species is not present in these sectors of the adjoining states, a peculiarly disjunct distribution that might call for closer taxonomic review. Regional endemic.

Threats and Vulnerability:

4. ***Fragility:***

The species is restricted to wetland habitat margins or narrow zones.

5. ***Trend:***

Unknown.

6. ***Threats:***

The species is potentially threatened by livestock grazing, water development, and weed invasions at ome sites.

7. ***Protection:***

Most Montana occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

Status information is needed from Idaho and Wyoming. Determine whether it is restricted to the Greater Yellowstone ecosystem in the U.S.

9. ***Protection:***

At least one in Montana and British Columbia.

10. ***Management:***

Potentially affected by road construction, logging, and grazing.

11. ***Research:***

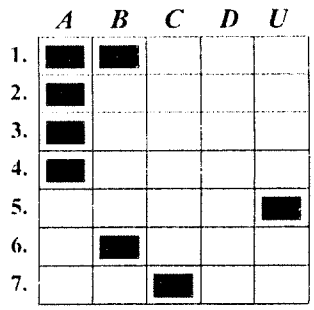
Annotation of dubious specimens and systematic note of hybridization presence/absence are needed.

Other Considerations:

There is evidence of hybridization with CASTILLEJA MINIATA among many populations in Montana.

CASTILLEJA GRACILLIMA

Slender Indian Paintbrush



STATE STATUS SUMMARY

State Rank: **S2**

11 EOs including historic collections; some potentially threatened by grazing, water developments and noxious weeds.

Rarity:

1. *Number of Occurrences:*

There are 15 occurrences, but 4 are known only by historical collections and two of these not identifiable. There is potential for incorrect identification of some recently reported occurrences not represented by specimens.

2. *Abundance:*

Estimated total in 10 recently (1990's) surveyed populations is 1,200-10,000 individuals, but only one occurrence has greater than 1,000 individuals. Number of genets is probably much less due to rhizomatous spread. Total known occupied habitat may be less than 20 acres.

3. *Range in Montana:*

It is a regional endemic species known from Gallatin, Madsion, and Park counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is restricted to wetland habitats, often specialized features, which constitute a small portion of the landscape, and is often further restricted to ecotones or specific positions along a moisture gradient.

5. *Trend:*

One occurrence was relocated after 50 years, but other occurrences have not been revisited.

6. *Threats:*

The species is potentially threatened by livestock grazing, water development, and weed invasions at some sites.

7. *Protection:*

Most occurrences, including the largest populations, are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

Survey work is the most incomplete in the Beartooth Mtns. Determine whether there is potential habitat in Madison Co. where the historic specimen is inadequate as voucher.

9. *Protection:*

One occurrence.

10. *Management:*

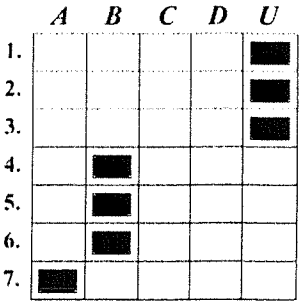
Impacted by trampling and likely by grazing. Species conservation is part of riparian habitat management.

Other Considerations:

There is evidence of hybridization with CASTILLEJA MINIATA within many populations.

CHENOPODIUM SUBGLABRUM

Smooth Goosefoot



GLOBAL STATUS SUMMARY

Global Rank: **G3G4**

Apparently rare throughout its range. Reported in approximately 14 states and provinces according to Kartesz' data, with sketchy data in most.

Rarity:

1. *Number of Occurrences:*

Over 10 EOs in sw. North Dakota including some which may be no longer extant, 5 EOs in Montana; may be common in the Nebraska Sandhills (no data), no verified records in Kansas, no available data in Nevada, published as "undoubtedly adventive" in Michigan (Voss 1985) but there may be specimen verification needs. The species description in Hitchcock et al. does not fit Great Plains material.

2. *Abundance:*

Very infrequent according to Flora of the Great Plains, 1986. Total numbers in Montana are less than 500, and total acres are less than 40.

3. *Global Range:*

Great Plains, west to Washington and Oregon, north into Canada and east to Great Lakes according to Kartesz. Crawford (1975) provides preliminary basis for treating Pacific NW material as a separate taxa from at least Great Plains material. Taxonomic research is needed to determine distribution, numbers of EOs, and abundance.

Threats and Vulnerability:

4. *Fragility:*

Requires early seral stages that are susceptible to degradation.

5. *Trend:*

The Montana riparian occurrence where it was noted as common in 1973 is believed extirpated, whether due to flow regime change, natural succession, or tamarisk invasion.

6. *Threats:*

Threatened by leafy spurge and tamarisk invasions, changes to flow regimes, and overgrazing or successional advance in the absence of natural/other disturbances. Riparian habitat is more threatened than sand dune habitat.

7. *Protection:*

Many occurrences are on public lands, including NPS, FWS,ûand BLM; some have a sensitive species policy in place.

Needs:

8. *Inventory:*

Need ranks in South Dakota, Michigan, Colorado, Utah, Nevada, Idaho, Oregon, and Washington.

9. *Protection:*

At least 1 in each state of confirmed distribution.

10. *Management:*

Maintenance of early seral habitat in the upland habitat settings requires a balance of fire and/or grazing. Maintenance of early seral habitat in the riparian setting may require intact low regime and landscape processes over a larger scale. Noxious weed control

11. *Research:*

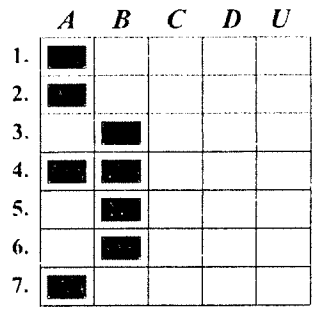
Verification of material referred to this as species is needed in all states outside Great Plains, possibly also involving taxonomic research.

Other Considerations:

May warrant "G3G4Q" if taxonomic research is needed.

CHENOPODIUM SUBGLABRUM

Smooth Goosefoot



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs, 1 possibly extirpated; potentially threatened by overgrazing, changes to river flow regime and noxious weeds.

Rarity:

1. *Number of Occurrences:*

There are 5 occurrences.

2. *Abundance:*

The species was described as "abundant" at one site, but was not extant when revisited 2 decades later. The total est. number of individuals in other occurrences is less than 500 and total occupied habitat is ca. 20 acres.

3. *Range in Montana:*

It is known from Carter, Cascade, Custer, Powder River and Sheridan counties; also reported from Rosebud in the Atlas of the Flora of the Great Plains. It is widely disjunct in localized habitats.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is confined to early successional microsites in localized sandy habitats, but these occur in both riverine and upland settings.

5. *Trend:*

The 1973 occurrence along Powder River floodplain may no longer be extant due to riparian succession and/or tamarisk invasion.

6. *Threats:*

Indirectly threatened by changes to river flow regime, invasions of exotic weeds, and overgrazing or successional advance in the absence of disturbances. Riparian occurrences are more threatened than upland occurrences.

7. *Protection:*

Three occurrences are on public land, however, sensitive species policies are not in place. Other occurrences are on private land.

Needs:

8. *Inventory:*

There are no extant populations known along rivers and there has been no systematic survey. Presence in a small isolated ridge blowout apart from dune systems, as recently found in Powder River Co., indicates that there may be more potential habitat than

9. *Protection:*

1 occurrence in ne. and in se. MT.

10. *Management:*

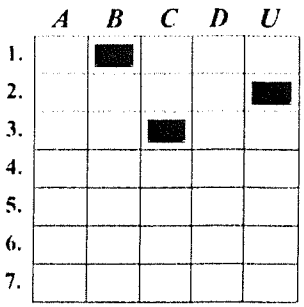
Maintenance of early seral habitat in the upland settings requires a balance of fire and/or grazing. Maintenance of early seral habitat in the riparian setting requires intact flow regimes and landscape processes over a larger scale. Tamarisk control is needed in

Other Considerations:

The species belongs to an under-collected genus and may be more common than records indicate but it is not known from man-made disturbed settings. There are major disparities in species' descriptions in different parts of its range, and numerical phenetic analysis has indicated that the material of the Great Plains is taxonomically distinct from the Pacific Northwest (Crawford 1974),

CRYPTANTHA SCOPARIA

Miner's Candle



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Patchy distribution over wide range, apparently secure in the center of the range.

Rarity:

1. ***Number of Occurrences:***

Two occurrences in Wyoming, 1 in Colorado, 5 in Idaho, 2 in Utah, 1 in Oregon; 1 in Montana, reported in Washington and Nevada, infrequent but not threatened in California.

2. ***Abundance:***

Unknown.

3. ***Global Range:***

Snake River plains of Idaho, extending into adjacent Oregon, Nevada, and Utah. Cronquist reports disjuncts on the Salmon River in Idaho and in Yakima Co., Washington. Also known from SW Wyoming and NW Colorado.

Threats and Vulnerability:

4. ***Fragility:***

5. ***Trend:***

6. ***Threats:***

7. ***Protection:***

Needs:

8. ***Inventory:***

Status information needed from Nevada and Washington; information also needed from literature and from herbarium specimens at RM. Field survey desirable to establish occurrence & abundance.

9. ***Protection:***

At least 1 occurrence in states where it is tracked.

10. ***Management:***

Avoid trampling.

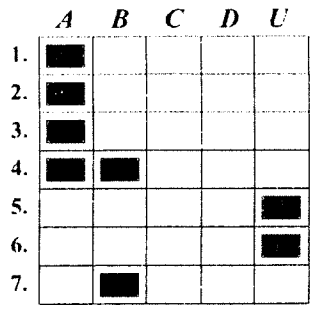
11. ***Research:***

Other Considerations:

Occurs on list of Special Plants in California (S3.3) with note to "see C. nevadensis in Jepson Manual." Hickman (1993) says C. nevadensis in California has been called C. scoparia and Welsh et al. do not list California within the species range in "A Utah

CRYPTANTHA SCOPARIA

Miner's Candle



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; possibly affected by land management practices

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

There were over 1,000 individuals estimated in 1991, but occupied habitat was only about an acre, and as an annual, its numbers are subject to large fluctuation from year-to-year.

3. *Range in Montana:*

It is peripheral species known from Carbon County. Its occurrence here is widely disjunct from the nearest known occurrences in southwest Wyoming and central Idaho.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a rather common vegetation community type, but specified limestone lithology and localized climate may indicate narrow ecological amplitude in the state.

5. *Trend:*

Only a few plants were found in 1993, two years after over a thousand plants were observed, but this may not reflect long-term trends. Populations of annuals often have dramatic fluctuations in number of flowering individuals from year to year, dependent on climate.

6. *Threats:*

Habitat is subject to grazing, but effects on the species are unknown. The species is potentially threatened by invasions of weeds which can be spread by livestock.

7. *Protection:*

The occurrence is on public land with sensitive species policies in place, but this may not insure its long term viability.

Needs:

8. *Inventory:*

Survey in Pryor Mtns.

9. *Protection:*

1 occurrence.

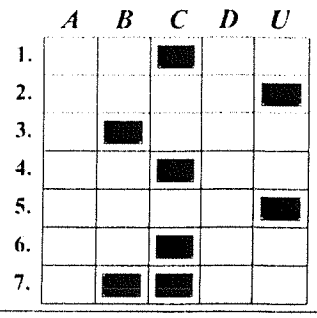
10. *Management:*

To be determined.

Other Considerations:

DRABA GLOBOSA

Round-fruited Draba



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Draba globosa is known from Colorado, Montana, Wyoming, Utah and Idaho. There are 29 occurrences documented globally, however, information from Utah was not acquired. This species may be primarily

Rarity:

1. *Number of Occurrences:*

Colorado has three occurrences documented from three counties (CNHP 1998). There are five occurrences documented in Idaho, last seen between 1978-1996 (ICDC 1998). There are four occurrences in Montana (MTNHP 1999). Wyoming NDD (1998) reports 17 occurrences, at least 9 of which have been documented since 1990. Utah occurrence data were not available.

2. *Abundance:*

Only one of the three Colorado occurrences reports individual numbers (50) (CNHP 1998). One of the Montana occurrences reports 500-1000 individuals but another reports this species as uncommon (MTNHP 1998). Wyoming NDD (1998) states that most populations are small.

3. *Global Range:*

This species is found in Lake, Gunnison and Clear Creek counties, Colorado (CNHP 1998); the Uintah Mountains in Utah (Rollins 1993); Beaverhead and Madison counties, Montana (MTNHP 1998); and six counties in Wyoming (WYNDD 1998); and Idaho (ICDC 1998).

Threats and Vulnerability:

4. *Fragility:*

The habitat is relatively resilient.

5. *Trend:*

Trend information is not available.

6. *Threats:*

This species may be primarily protected from human threats by its inaccessible habitat (WYNDD 1998).

7. *Protection:*

All three of the Colorado occurrences are found on National Forest property (CNHP 1998). There are two occurrences in Montana within Wilderness Areas and one in a Research Natural Area -RNA- (MNHP 1998). All occurrences in Wyoming are on public land; there are 13 found in Wilderness Areas, and in Grand Teton National Park, one in the proposed Osborn Mountain RNA, and one in the potential Beartooth Butte RNA (WYNDD 1998).

Needs:

8. *Inventory:*

Needs status information in UT.

9. *Protection:*

At least one in each state where it is tracked.

10. *Management:*

None identified.

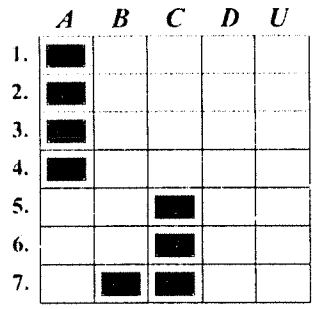
11. *Research:*

Other Considerations:

WYNDD tracks this species as an S2, MNHP as an S1 (1998). Utah NHP was not contacted regarding this species.

DRABA GLOBOSA

Round-fruited Draba



STATE STATUS SUMMARY

State Rank: **S1**

Regional endemic with 4 EOs; no threats identified.

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences.

2. *Abundance:*

One occurrence was estimated to have greater than 500 individuals and the species was described as uncommon at another, but information on abundance is lacking for the other two.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead and Madison Counties. It occurs in three mountain ranges, but these are close together and the total range is a very small area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with a very narrow ecological amplitude, restricted to limestone substrates at the highest elevations in its range.

5. *Trend:*

No data on trends are available, but the species has possibly been stable due to its occurrence in high elevations.

6. *Threats:*

This species may be protected from human threats by its inacessible habitat.

7. *Protection:*

All but one occurrence are on public lands in a wilderness area, natural research area, or with sensitive species policies in place. One occurrence is on private land within a wilderness area.

Needs:

8. *Inventory:*

Distribution information is incomplete throughout range.

9. *Protection:*

None identified.

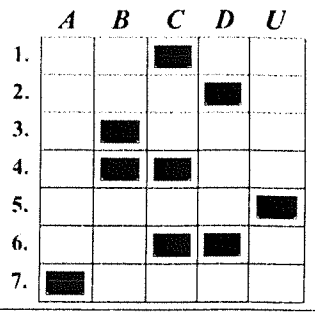
10. *Management:*

Determine whether there are any trail impacts.

Other Considerations:

ERIOGONUM VISHERI

Visher's Buckwheat



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Great Plains regional endemic known from fewer than 100 element occurrences in South Dakota, North Dakota and Montana. Potentially threatened and vulnerable locally.

Rarity:

1. *Number of Occurrences:*

Over 30 EOs in ND including 1 historic record (1993), 46 EOs in SD (1994), and 1 EO in MT (1999).

2. *Abundance:*

Local populations vary greatly in size between populations and between years but range up to several thousand individuals.

3. *Global Range:*

Spotty distribution across 5 counties of southwest and southcentral N. Dakota, 8 counties of central South Dakota, and 1 county in Montana. There is an unconfirmed report for Mountrail County, North Dakota.

Threats and Vulnerability:

4. *Fragility:*

Harsh setting with unstable conditions. Seed-banking is probably a survival strategy.

5. *Trend:*

Populations of this annual are often prone to dramatic year-to-year fluctuations in number of flowering plants, and large population fluctuations occur depending on weather. Annual changes for this species are compounded by habitat erosion.

6. *Threats:*

Bentonite mining has not impacted this species to date. Any factors that foster invasion of weedy annuals or accelerate erosion are potential indirect threats.

7. *Protection:*

Historical reports for Badlands National Park have not been confirmed, but several occurrences are in National Grasslands of South Dakota and many are in Little Missouri National Grassland in North Dakota where sensitive species policies are in place.

Needs:

8. *Inventory:*

Survey in Badlands National Park, in the course of project work in North and South Dakota, and in southeastern counties of Montana.

9. *Protection:*

Pursue establishment of 'Special Interest Area' designation on United States Forest Service lands, and registry for privately owned sites, focusing on large landscape areas with suitable habitat.

10. *Management:*

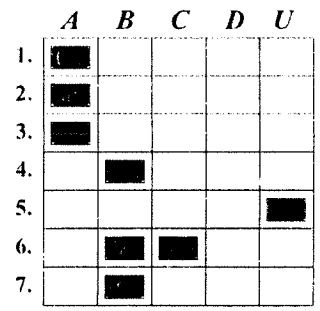
11. *Research:*

Determine length of seed viability. Correlate occurrences geologic members and type of substrate.

Other Considerations:

ERIOGONUM VISHERI

Visher's Buckwheat



STATE STATUS SUMMARY

State Rank: **S1**

1 EO

Rarity:

1. *Number of Occurrences:*

1 EO

2. *Abundance:*

Ca. 1000 plants spanning over 1 mile

3. *Range in Montana:*

The species is only known from Carter County, where it was discovered in 1997.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Restricted to Badlands outcrop and outwash; only known from the Hell Creek Formation in Montana, which has a wide range but perhaps limited extent.

5. *Trend:*

The species is an annual, subject to fluctuating numbers from year to year and accompanying shifts in topographic position depending on dispersal and erosion patterns. Population numbers dropped by at least a magnitude by 1999.

6. *Threats:*

The habitat has few direct threats but is localized and degraded under heavy grazing and accompanying exotic species invasion.

7. *Protection:*

The species occurs on public land but is not recognized on current sensitive species list.

Needs:

8. *Inventory:*

Baseline inventory needed in Hell Creek Formation outcrops of Carter, Fallon and possibly Powder River cos.

9. *Protection:*

To be determined.

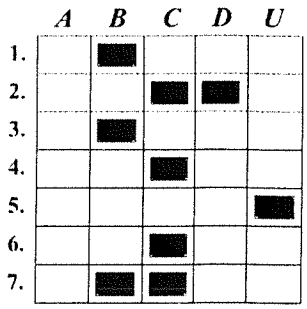
10. *Management:*

Low suitability for livestock use should limit impacts, unless it is made part of primary range, fostering weed invasion.

Other Considerations:

Recently documented addition to state flora.

HAPLOPAPPUS CARTHAMOIDES VAR SUBSQUARROSUS



Beartooth Large-flowered Goldenweed

GLOBAL STATUS SUMMARY

Global Rank: **G4G5T2T3**

Pyrrocoma carthamoides var. subsquarrosus was ranked by Fertig in 1997 review and update for Wyoming Species of Concern list. In 1995, it was documented from 11 locations, but may be more common (survey

Rarity:

1. *Number of Occurrences:*

11 occurrences documented by herbarium specimens in WY (1997); 8 occurrences in Montana (1999).

2. *Abundance:*

Bald Ridge and Robertson Draw populations are large, the latter ca. 100,000. But total occupied habitat is less than 5,000 acres in Montana (1999).

3. *Global Range:*

Endemic to northern Absaroka Mountains, east flank of Beartooth Mountains, and Pryor Mountains.

Threats and Vulnerability:

4. *Fragility:*

Habitat is fairly resilient.

5. *Trend:*

Unknown.

6. *Threats:*

Potentially affected by fire suppression, oil and gas development, and accompanying noxious weed invasion. Existing threats are few or none, due to distribution in wilderness areas, and limited if any sensitivity to grazing.

7. *Protection:*

At least several occurrences are in Wilderness (may occur in Yellowstone National Park) and part of one is in Meeteetsee Spires ACEC.

Needs:

8. *Inventory:*

Potential habitat in Montana has been identified as far northwest as Stillwater River, and searched without success as far northwest as Gold Creek, Silver Run Creek, and the West Fork of Rock Creek. Extended survey is warranted around any existing occurrences

9. *Protection:*

Existing protection and sensitive species status may effectively address protection need.

10. *Management:*

Large populations, including Robertson Draw, Wolf Creek, and Indian Spring, should be monitored for invasion of exotic species and encroachment by woody species. Address in fire management planning and wildfire assessment studies.

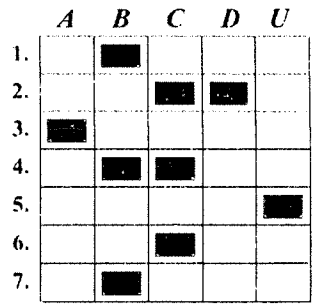
11. *Research:*

Inventory.

Other Considerations:

HAPLOPAPPUS CARTHAMOIDES VAR SUBSQUARROSUS

Beartooth Large-flowered Goldenweed



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 8 EOs including large populations.

Rarity:

1. *Number of Occurrences:*

There are 8 occurrences of this species first discovered in Montana in the 1990's.

2. *Abundance:*

Total estimated individuals is greater than 100,000. Total occupied habitat is about 4,500 acres.

3. *Range in Montana:*

It is a regional endemic species known the northern Absaroka Mtns. in Park Co., WY, the east front of the Beartooth Mountains and foothills of the Pryor Mountains in Carbon Co., MT.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has moderate ecological amplitude. It is adapted to habitat which is relatively widespread in its range but which depends on fire for its perpetuation. It grows in both limestone and granitic derived substrates.

5. *Trend:*

There are no direct indications of trends. It is possible that some populations have increased under cattle grazing, or decreased due to shrub and tree encroachment caused by wildfire suppression.

6. *Threats:*

Habitat of most occurrences is subject to livestock grazing, sometimes heavy, but the species does not appear to be negatively affected at least in the short term. Long term grazing combined with fire suppression could result in encroachment of habitat by sagebrush and conifers, posing a threat to the species. Invasions of exotic weeds are also a potential future threat.

7. *Protection:*

Part of one occurrence is in Meeteetsee Spires ACEC. Most are on public lands and are included in sensitive species recognition.

Needs:

8. *Inventory:*

Potential habitat was identified as far northwest as the Stillwater River (not surveyed); unsuccessful preliminary survey was at Gold Creek, Silver Run Creek and West Fork of Rock Creek; and survey in the Pryor Mtns. was also preliminary.

9. *Protection:*

Existing sensitive species status meets protection needs.

10. *Management:*

Large populations, such as Robertson Draw, Wolf Creek and Indian Spring, should be monitored for invasion of exotic weeds and woody encroachment.

Other Considerations:

LEPTODACTYLON CAESPITOSUM

Leptodactylon

GLOBAL STATUS SUMMARY

	A	*B*	*C*	*D*	*U*
1.					
2.					
3.			■		
4.			■		
5.					■
6.			■		
7.					

Global Rank:

Rarity:

1. ***Number of Occurrences:***

   12 EOs in Montana (1999), probably fewer than 20 records in Nevada, 1-5 records in Nebraska.

2. ***Abundance:***

   Over 5,000 plants observed in Montana, occupying habitat over 40 acres.

3. ***Global Range:***

   Small portion of Carbon Co., MT, WY, and UT, to NE and CO. Peripheral.

Threats and Vulnerability:

4. ***Fragility:***

   The harsh, barren setting is resilient but friable.

5. ***Trend:***

   Unknown.

6. ***Threats:***

   Livestock and horse grazing have limited if any affects.

7. ***Protection:***

   Most occurrences in Montana are on federal land with sensitive species policies in place but this does not insure their long-term viability.

Needs:

8. ***Inventory:***

   Need rank in CO, NV, UT, WY.

9. ***Protection:***

   At least 1 EO in peripheral states.

10. ***Management:***

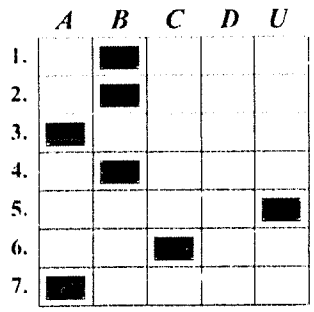
    None identified.

11. ***Research:***

Other Considerations:

LEPTODACTYLON CAESPITOSUM

Leptodactylon



STATE STATUS SUMMARY

State Rank: **S2**

12 EOs in limited area; fragile habitat

Rarity:

1. *Number of Occurrences:*

There are 12 occurrences.

2. *Abundance:*

An estimated total of over 5,000 individuals have been observed. Total known occupied habitat is over 40 acres.

3. *Range in Montana:*

It is a peripheral species known from Carbon County. All occurrences are in the Pryor Mountains area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of barren outcrop though on a single geologic formation, and all are in an area with a climate which is unique in the state.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Habitat of some occurrences is subject to livestock and wild horse grazing. Direct effects have not been observed but trailing on fragile habitat is possible. The largest population in Bighorn Canyon NRA adjoins the road, potentially destabilized in road maintenance and livestock trailing along it. Recreational use in habitat is light.

7. *Protection:*

All but 2 occurrences are on public lands, but this may not insure their long term viability.

Needs:

8. *Inventory:*

Field surveys as part of project clearance.

9. *Protection:*

At least 1, to preserve species in Montana.

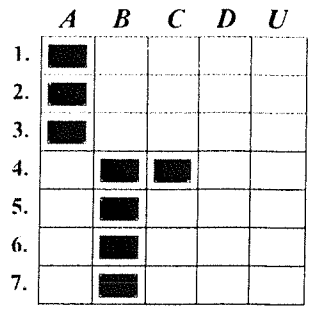
10. *Management:*

Avoid new and expanded road and right-of-way work through habitat.

Other Considerations:

LESQUERELLA CARINATA VAR LANGUIDA

Garnet Bladderpod



GLOBAL STATUS SUMMARY

Global Rank: **G3G4T1**

Three element occurrences in a highly restricted range, threatened by spotted knapweed (Centaurea maculosa) competition, and potentially by herbicide spraying.

Rarity:

1. *Number of Occurrences:*

There are three element occurrences; two are made up of multiple segments.

2. *Abundance:*

It occupies roughly 200 total acres as known to date.

3. *Global Range:*

It is only known from the lower montane zone on the south side of the Garnet Range, along tributaries of the Clark Fork River, Granite county, Montana.

Threats and Vulnerability:

4. *Fragility:*

The habitat is fairly resilient, and the changeable microhabtat conditions are somewhat buffered by facilitation/competition.

5. *Trend:*

Spotted knapweed (Centaurea maculosa) negatively affects seedling survivorship, which is not especially critical in the life cycle, but is projected as potentially contributing to decline.

6. *Threats:*

Spotted knapweed (Centaurea maculosa) competition or indiscriminate spraying of spotted knapweed potentially impact this taxon. Livestock use is concentrated in its habitat on lower slopes and it potentially spreads knapweed. There is no active mining or quarrying at the sites, although claims and mining roads are in the area.

7. *Protection:*

The three populations are on Bureau of Land Management land where it is recognized as sensitive. Part of the largest occurrence extends onto state and private lands.

Needs:

8. *Inventory:*

Surveys for additional patches are recommended between the occurrences. Extended survey of Bureau of Land Management lands was conducted in 1995 without finding new occurrences.

9. *Protection:*

Part of the largest occurrence is on state and private land, needing protection. While the taxon is recognized as a Bureau of Land Management sensitive species, additional site protection may be needed to address stewardship needs.

10. *Management:*

An integrated weed management program is needed. The southern flank of the Garnet Mountains between Drummond and Nimrod should be considered as a priority for release of knapweed (Centaurea maculosa) biocontrol agents. Controls such as fencing to

11. *Research:*

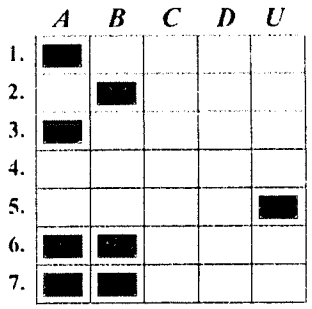
Sensitivity of the taxon to "gentle" herbicides such as Stinger, used at a Lesquerella paysonii site, require research.

Other Considerations:

This is a short-lived perennial with survival made more precarious by natural fluctuations in numbers.

LESQUERELLA CARINATA VAR LANGUIDA

Garnet Bladderpod



STATE STATUS SUMMARY

State Rank: **S1**

State endemic with 3 EOs; threatened exotic species encroachment.

Rarity:

1. ***Number of Occurrences:***

   3 EOs.

2. ***Abundance:***

   Population estimates range from 100-100,000 magnitude.

3. ***Range in Montana:***

   Restricted to one area of the Garnet Range.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

5. ***Trend:***

   Subject to population fluctuations as a short-lived perennial, declining in drought years. Overall trend is unknown.

6. ***Threats:***

   Directly threatened by knapweed invasion as fostered by grazing; potentially affected by mining, logging, and erosion effects of grazing.

7. ***Protection:***

   Most of the populations occur on BLM land, recognized as a sensitive species.

Needs:

8. ***Inventory:***

   Systematic surveys need to include private lands. Detailed field surveys are needed on public lands as part of project clearance.

9. ***Protection:***

   Protection of at least the largest occurrence is needed. Note: This species overlaps with other priority GRANK elements.

10. ***Management:***

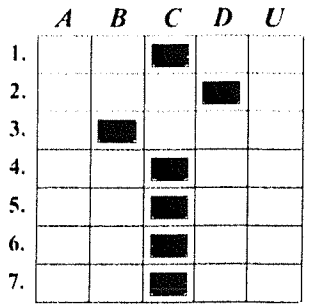
    Aggressive knapweed control is needed, also addressing weeds as part of any local allotment and transportation planning work. This species could be impacted by large crownfires; any prescribed treatments are best conducted on a small scale and the intensity of

Other Considerations:

Varieties are sometimes treated as lower priorities than full species. However, this is the only variety in the state, it is state endemic, it is highly disjunct from the type variety, and it occurs at much lower elevations.

LESQUERELLA KLAUSII

Divide Bladderpod



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Known from over forty occurrences, of which at least three are protected. Habitat has few threats baring noxious weed invasion.

Rarity:

1. ***Number of Occurrences:***

There are about 40 documented occurrences, and reports of others since the species was dropped from tracking. during field surveys in 1986, fourteen in 1987.

2. ***Abundance:***

Approximately 17,000-18,000 plants observed to date.

3. ***Global Range:***

State endemic, restricted to Lewis and Clark, and Meagher counties, Montana.

Threats and Vulnerability:

4. ***Fragility:***

Fairly resilient.

5. ***Trend:***

Appears stable.

6. ***Threats:***

Some occurrences are potentially threatened by off-road vehicle use, road construction, and accompanying noxious weed invasion; many occurrences on steep or inaccessible slopes.

7. ***Protection:***

Three occurrences are within the Gates of the Mountains Wilderness Area, Helena National Forest.

Needs:

8. ***Inventory:***

Additional occurrences could probably be found in the northern Big Belt mountains and southern Scapegoat Mountain region, including areas outside of Helena NF.

9. ***Protection:***

None identified; re-evaluate periodically.

10. ***Management:***

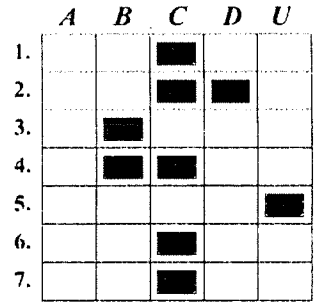
Control noxious weeds.

11. ***Research:***

Other Considerations:

LESQUERELLA KLAUSII

Divide Bladderpod



STATE STATUS SUMMARY

State Rank: **S3**

State endemic with 40+ occurrences including many large populations.

Rarity:

1. *Number of Occurrences:*

There are about 40 documented occurrences, and reports of others since the species was dropped from tracking.

2. *Abundance:*

Estimated totals range from 20 to 3,000 individuals per occurrence. Some cover large areas and consist of multiple subpopulations.

3. *Range in Montana:*

It is a state endemic species known from Broadwater, Lewis and Clark, and Meagher counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has a moderate ecological amplitude indicated by its rather broad elevational range and its adaptation to a variety of open habitats including disturbed roadsides.

5. *Trend:*

It is a short lived perennial and its populations are likely to fluctuate in response to climatic cycles. Overall trend is unknown.

6. *Threats:*

There are few imminent threats to the species. The largest potential threat is spread of spotted knapweed and leafy spurge into its habitat, which may be fostered by off road vehicle travel, road maintenance, and other management activities. The Scratchgravel Hill occurrence is threatened by leafy spurge. Roadside occurrences are potentially threatened by indiscriminate herbicide spraying.

7. *Protection:*

Many occurrences are on public lands, including some in wilderness area. Protection is warranted if threats escalate.

Needs:

8. *Inventory:*

Additional occurrences may be found in the northern Big Belt Mountains and the southern Scapegoat Mountains. Continue compiling records,and re-evaluate weed threats information in the future.

9. *Protection:*

Protected in the Cabin Creek RNA and Gates of the Mountain Wilderness.

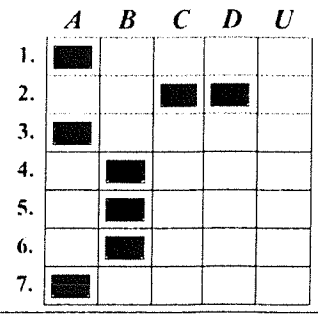
10. *Management:*

Leafy spurge is invading the Scratchgravel Hills occurrence along an OHV trail.

Other Considerations:

LESQUERELLA LESICII

Lesica's Bladderpod



GLOBAL STATUS SUMMARY

Global Rank: **G1**

State endemic restricted to the Pryor Mountains of southcentral Montana.

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences.

2. *Abundance:*

There is an estimated total of 20,000 to 100,000 individuals, but known occupied habitat is about 400 acres.

3. *Global Range:*

Endemic to the Pryor Mountains, Carbon County, Montana (Rollins 1995).

Threats and Vulnerability:

4. *Fragility:*

While the habitat seems fairly resilient, the species is in a narrow, exposed zone affected by the balance between succession and natural disturbance..

5. *Trend:*

Terraces created by wild horse trailing are thought to have reduced part of a population.

6. *Threats:*

Habitat is potentially affected by wild horses.

7. *Protection:*

All known occurrencs are on pubic land, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

Add to any inventory or project clearance work on limestone ridges in Pryor Mountains.

9. *Protection:*

All known occurrences.

10. *Management:*

Determine affects of wild horses.

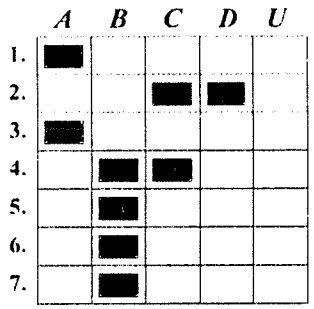
11. *Research:*

Other Considerations:

Recently described.

LESQUERELLA LESICII

Lesica's Bladderpod



STATE STATUS SUMMARY

State Rank: **S1**

State endemic with 3 EOs, potentially affected by grazing.

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences.

2. *Abundance:*

There is an estimated total of 20,000 to 100,000 individuals, but known occupied habitat is about 400 acres.

3. *Range in Montana:*

It is a state endemic species known from Carbon County. The entire range is restricted to a single 7.5' quadrangle in the southeast Pryor Mountains.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The habitat seems fairly resilient but the species is restricted to a exposed zone affected by the balance between succession and natural disturbance.

5. *Trend:*

Terraces created primarily by wild horse trailing may have reduced habitat area of one occurrence by as much as 20%.

6. *Threats:*

Habitat is potentially affected by wild horses.

7. *Protection:*

All known occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. *Inventory:*

Conduct detailed field surveys as part of any surface-disturbing activities on ridgelines in the eastern Pryor Mtns.

9. *Protection:*

At least the largest occurrence.

10. *Management:*

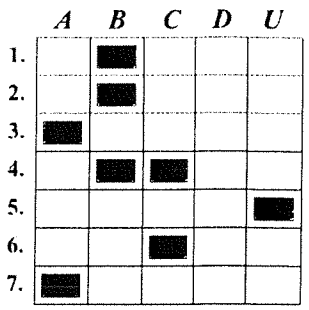
Evaluate affects of wild horse management, including establishment requirements and terracing affects. This species is in sparsely-vegetated microhabitat, but may be affected by intense heat of crownfires. Get information on fire response of LESQUERELLA

Other Considerations:

Recently described taxon.

LESQUERELLA PULCHELLA

Beautiful Bladderpod



GLOBAL STATUS SUMMARY

Global Rank: **G2**

State endemic restricted to one county, with limited threats, and spanning large elevation range.

Rarity:

1. ***Number of Occurrences:***

There are 10 occurrences.

2. ***Abundance:***

An estimated total of 10,000 to 30,000 individuals have been observed, but total known ocupied habitat may be less than 100 acres.

3. ***Global Range:***

It is a state endemic restricted to Beaverhead County. It occurs in the Pioneer Mtns., the Grasshopper Creek drainage, and the Centennial Mtns. Beaverhead County, Montana (Rollins 1995).

Threats and Vulnerability:

4. ***Fragility:***

The harsh setting is fairly resilient but the species is altered by microhabitat change and succession.

5. ***Trend:***

This short-lived perennial may be prone to population fluctuations which follow climatic cycles.

6. ***Threats:***

The species faces few imminent threats, but mining and spread of exotic species in its habitat are potential threats. Some of the high elevation populations are relatively secure in remote habitat.

7. ***Protection:***

All populations are on public lands with sensitive species policies in place, abut this may not insure their long-term viability.

Needs:

8. ***Inventory:***

Survey is incomplete in identifying all mountain ranges where it is present, and distribution within them.

9. ***Protection:***

At least one large foothill and subalpine population.

10. ***Management:***

Control noxious weeds.

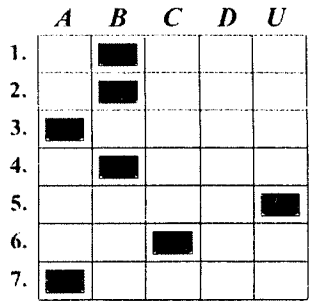
11. ***Research:***

Other Considerations:

Recently described.

LESQUERELLA PULCHELLA

Beautiful Bladderpod



STATE STATUS SUMMARY

State Rank: **S2**

State endemic with 10 occurrences; some potentially affected by mining and noxious weeds.

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences.

2. *Abundance:*

An estimated total of 10,000 to 30,000 individuals have been observed, but total known occupied habitat may be less than 100 acres.

3. *Range in Montana:*

It is a state endemic species restricted to Beaverhead County. It occurs in the Pioneer Mtns., the Grasshopper Creek drainage, and the Centennial Mtns. Though it is geographicallyl restricted, it spans a range of elevations.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has moderate habitat specificity. It is restricted to sparsely vegetated substrates derived from limestone, but has a bimodal elevational distribution with occurrences near the lower and upper tree lines.

5. *Trend:*

This short-lived perennial may be prone to population fluctuations which follow climatic cycles.

6. *Threats:*

The species faces few imminent threats, but mining and spread of exotic weeds in its habitat are potential future threats.

7. *Protection:*

All occurrences are on public lands with sensitive species policies in place, but this may not insure their long term viability.

Needs:

8. *Inventory:*

The survey may be incomplete in identifying all mountain ranges where it is present, and the distribution within them.

9. *Protection:*

At least 1 low and 1 high elevation occurrence.

10. *Management:*

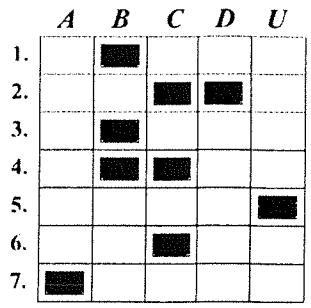
Control spread of noxious weeds at the large occurrence around Bannack State Park.

Other Considerations:

Recently described taxon.

LOMATIUM ATTENUATUM

Taper-tip Desert-parsley



GLOBAL STATUS SUMMARY

Global Rank: **G3**

There is 1 very extensive population in northwestern Wyoming and 9 in southwestern Montana. The species is dependent on bare slopes with little vegetation - and is apparently intrinsically rare.

Rarity:

1. *Number of Occurrences:*

Recent survey indicates that occurrence in the North Fork Shoshone River drainage is one large continuous population; it occurs only in this drainge in Wyoming, and in 9 occurrences in Montana (1999).

2. *Abundance:*

There are over 10,000 individuals estimated in Montana alone, but occupying less than 1,000 acres (1999).

3. *Global Range:*

Absaroka Mountains, Park County, Wyoming, of North Fork Shoshone River drainage; and in northern Ruby Mountains, northern Tendoy Mountains, and in lower Grasshopper Creek drainage of Beaver and Madison cos., MT.

Threats and Vulnerability:

4. *Fragility:*

The habitat is fairly resilient, but critical successional status and vernal conditions may be more vulnerable.

5. *Trend:*

Unknown.

6. *Threats:*

Its habitat is relatively inaccessible except in the Grasshopper Creek drainage, but there is potential threat of spotted knapweed invasion at most Montana sites.

7. *Protection:*

Most occurrences are on public lands, but it is only recognized as sensitive by BLM.

Needs:

8. *Inventory:*

Extended field surveys are needed in the ranges where it has been documented, including other portions of the Absarokas to see if it occurs outside the North Fork Drainage, and throughout its Montana range.

9. *Protection:*

At least major parts of largest occurrences in both states.

10. *Management:*

Control knapweed spread.

11. *Research:*

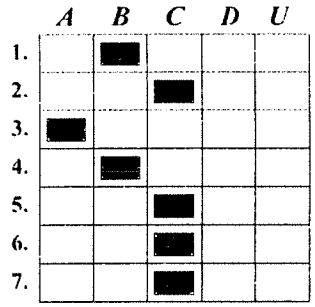
Information on pollinators - this could make a difference in what constitutes a breeding population, and thus how many occurrences there are.

Other Considerations:

E. Evert feels that this species may be more widespread. GRANK of "G3" from WYHP (4/98).

LOMATIUM ATTENUATUM

Taper-tip Desert-parsley



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 9 occurrences including large populations; potentially affected by mining and noxious weeds.

Rarity:

1. *Number of Occurrences:*

There are 9 occurrences. All were surveyed in the 1990's and the species was the subject of status surveys in 1997.

2. *Abundance:*

There are an estimated 10,000-100,000 individuals. Known occupied habitat is less than 1,000 acres.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead and Madison Counties. It occurs in the northern Tendoy Mts., the lower Grasshopper Creek drainage, and the northern Ruby Mts..

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is restricted to certain substrates (limestone and volcanic scree) but its occurrences often span plant community boundaries.

5. *Trend:*

The species' occurrence in high numbers in habitat which has been little impacted is taken to indicate stability.

6. *Threats:*

The species faces few imminent threats but mining and invasions of exotic weeds may threaten habitat in the future. Weed encroachment is potentially fostered by mining activity, livestock grazing, nearby subdivision developments, logging, and vehicle travel.

7. *Protection:*

Almost all populations are on public lands with sensitive species policies in place.

Needs:

8. *Inventory:*

It is to be sought in the Pioneer and Tobacco Mtns. and in proximity to known occurrences.

9. *Protection:*

At least 1 in MT.

10. *Management:*

Control noxious weed spread near largest occurrence around Bannack State Park.

Other Considerations:

Recently documented addition to the state flora. The early flowering and similarity to LOMATIUM COUS mean that this species may have been overlooked.

LOMATIUM NUTTALLII

Nuttall Desert-parsley

	A	B	C	D	U
1.					
2.					
3.					■
4.					
5.					
6.					
7.					

GLOBAL STATUS SUMMARY

Global Rank: **G3G4**

Regional endemic of at least central Wyoming, western Nebraska, Colorado, South Dakota and Montana. It is not common in Wyoming, which comprises the majority of its range.

Rarity:

1. ***Number of Occurrences:***

   1 EO in Montana (1999), considered S1S3 in Nevada.

2. ***Abundance:***

   Described as uncommon at the Montana occurrence.

3. ***Global Range:***

   According to the Intermountain Flora (Cronquist et al., 1997; Vol.3, part A), Lomatium nuttallii "occurs from Scottsbluff, Nebraska (on the border of Wyoming), all the way across southern Wyoming to Uinta county"; also in Colorado and Montana. It is historically known from South Dakota. If a larger range has been attributed to this species, it needs reassessing. Confusion exists due to taxonomic and nomenclatural situation involving Lomatium graveolens.

Threats and Vulnerability:

4. ***Fragility:***

5. ***Trend:***

6. ***Threats:***

   The Montana occurrence is potentially impacted by mining.

7. ***Protection:***

Needs:

8. ***Inventory:***

   Systematic survey needed in Big Horn Co., Montana.

9. ***Protection:***

   At least one occurrence in each of the four states where it is extant.

10. ***Management:***

    Document mining impact at Montana EO.

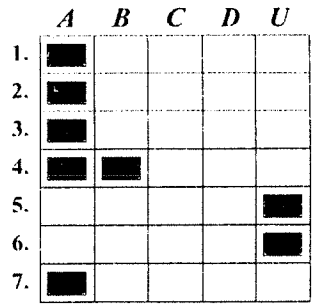
11. ***Research:***

    Clarify taxonomic and nomenclatural questions to confirm species' distribution, or else re-evaluate GRANK.

Other Considerations:

LOMATIUM NUTTALLII

Nuttall Desert-parsley



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; potentially impacted by mining.

Rarity:

1. ***Number of Occurrences:***

   There is 1 occurrence based on a 1980 collection.

2. ***Abundance:***

   The species was described as uncommon.

3. ***Range in Montana:***

   It is a peripheral species known from Big Horn County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   Details concerning habitat of the one occurrence are not available, but its general habitat (sandstone outcrop with Ponderosa Pine) is widely scattered but comprises a small portion of the landscape.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   Potentially impacted by mining.

7. ***Protection:***

   The occurrence is on private or tribal land and its precise location is unknown.

Needs:

8. ***Inventory:***

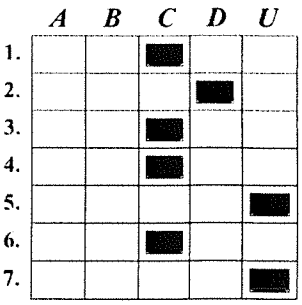
9. ***Protection:***

10. ***Management:***

Other Considerations:

ORYZOPSIS CONTRACTA

Contracted Indian Ricegrass



GLOBAL STATUS SUMMARY

Global Rank: **G3G4**

Oryzopsis contracta is known from a number of occurrences and has a scattered distribution and low threats throughout its range of Colorado, Utah, Wyoming, and Montana.

Rarity:

1. ***Number of Occurrences:***

60 extant occurrences in Wyoming, 7 extant and 1 historical occurrence in Montana; and the numbers in Utah, and Colorado are not known.

2. ***Abundance:***

Estimated totals are roughly 100,000 in Montana.

3. ***Global Range:***

Chiefly in the southern half of Wyoming; also in Montana, Utah, and northern Colorado.

Threats and Vulnerability:

4. ***Fragility:***

It occupies a wide range of grassland habitats over its range, relatively resilient.

5. ***Trend:***

Unknown.

6. ***Threats:***

It occupies what is generally secondary range, but is potentially threatened under heavy grazing and noxious weed invasion.

7. ***Protection:***

Unknown.

Needs:

8. ***Inventory:***

Need rank information from CO and UT. Information from literature and herbarium sheets at RM; field survey desirable to establish more complete occurrence & abundance.

9. ***Protection:***

None identified.

10. ***Management:***

None identified.

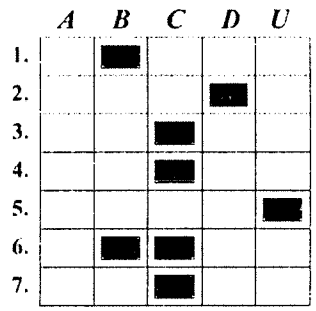
11. ***Research:***

Other Considerations:

GRANK of "G3G4" from WYHP (4/98).

ORYZOPSIS CONTRACTA

Contracted Indian Ricegrass



STATE STATUS SUMMARY

State Rank: **S3**

Unresolved as vulnerable. Collected from sw, nw MT including degraded range.

Rarity:

1. *Number of Occurrences:*

There are 7 recently surveyed occurrences and one historical collection.

2. *Abundance:*

Estimated total individuals is greater than 100,000.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead, Madison, and Pondera counties. Its range thus spans the north-south axis of the state and the Continental Divide.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has relatively broad ecological amplitude. It is restricted to dry, sparsely vegetated habitats or microsites, but sites across its range have a wide range in elevation and variation in associated plant species.

5. *Trend:*

It is likely to have decreased in some areas under heavy grazing, but other occurrences may be recently adventive.

6. *Threats:*

The species is potentially threatened by overgrazing by livestock but is likely compatible with lower levels of grazing. It is a poor competitor and is potentially threatened by invasions of exotic weeds.

7. *Protection:*

A few occurrences are on public lands but the species is not deemed in need of special protection.

Needs:

8. *Inventory:*

Continue compiling records in the course of fieldwork.

9. *Protection:*

None identified.

10. *Management:*

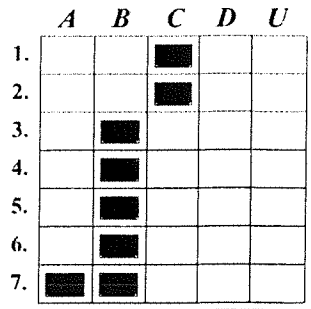
Record any management needs as new records are documented.

Other Considerations:

Recently documented addition to state flora. Considering its broad geographic range and ecological amplitude and its similarity to another common species, it is likely to be more abundant than current records indicate.

PENSTEMON LEMHIENSIS

Lemhi Beardtongue



GLOBAL STATUS SUMMARY

Global Rank: G3

Restricted range, with over 100 element occurrences, but most of them small. Some major populations have shown drastic declines. Potentially affected by many land use practices.

Rarity:

1. *Number of Occurrences:*

102 element occurrences in Idaho and 85 in Montana (1999). The tally is treated as less than 100 because EO specifications have not been applied consistently throughout and D-ranked EOs are not appropriate to include in the tally. Of the current total, 93 occurrences are made up of fewer than 30 individuals, an undetermined number have severe knapweed infestation, an undetermined number warrant merging, and an undetermined number are restricted to roadcuts.

2. *Abundance:*

Total number of individuals is between 3,000-10,000 and total acreage is between 2,000-10,000 acres.

3. *Global Range:*

Regional endemic of Lemhi county, Idaho; and Beaverhead, Deer Lodge, Ravalli and Silverbow counties, Montana.

Threats and Vulnerability:

4. *Fragility:*

Seedling establishment is the critical demographic stage, strongly affected by climate and surface conditions.

5. *Trend:*

Some of the largest populations have shown major decline while others are stable. Widespread population declines are attributed to prevailing drought conditions since the late 1980s, possibly exacerbated by sagebrush encroachment.

6. *Threats:*

Noxious weed invasion (primarily knapweed, Centaurea maculosa), indiscriminate spraying of herbicides, curtailment of natural disturbance regimes, vulnerability to grazing and logging under some conditions, and widespread potential mining activity warrant conservative ranking of threats.

7. *Protection:*

16 of the 18 highest quality occurrences are on federal land, as are the majority of others; with sensitive species policies in place.

Needs:

8. *Inventory:*

Project-driven inventory, and inventory for new occurrences particularly at the periphery of the range are still needed.

9. *Protection:*

Forest Service and Bureau of Land Management sensitive species status remain appropriate. National Park Service recognition status is needed. Protection priorities are spelled out in the conservation strategy (Elzinga 1997).

10. *Management:*

Limit grazing to 30% of infloresence removal or after seed set, design mineral exploration activities to avoid occupied areas, avoid timber harvest impacts by using low impact logging technique or avoiding occupied habitat, evaluate response to prescribed burn

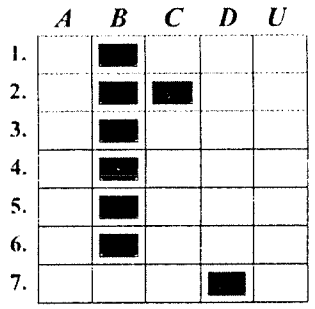
11. *Research:*

1) Compatible, effective knapweed control measures, 2) Prescribed burn management response, and 3) Germination and seedbank studies. These research needs are spelled out in the conservation strategy (Elzinga 1997).

Other Considerations:

PENSTEMON LEMHIENSIS

Lemhi Beardtongue



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 81 occurrences but only 14 with 100+ individual plants; potentially affected by land management practices.

Rarity:

1. *Number of Occurrences:*

There are 81 occurrences, but only ca. 14 occurrences have more than 100 plants. A small number are nonviable populations in roadcuts and an unknown number warrant merging as part of a larger population complex.

2. *Abundance:*

Sum of individuals total over 3,000, but persistence is questionable.

3. *Range in Montana:*

It is a regional endemic species, known from Beaverhead, Deer Lodge, Ravalli, and Silver Bow counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively broad amplitude but requires low competition conditions maintained by fire in at least a segment of its lower elevation range or else reduced to landscape patches with low competition for the critical stages of seedling establishment.

5. *Trend:*

Some but not all are large populations that declined significantly during the drought conditions of the 1990's.

6. *Threats:*

The habitat is threatened by invasion of spotted knapweed in Ravalli County, by grazing under some conditions, by mining, and possibly by fire suppression. The species is threatened by indiscriminate herbicide spraying and possibly by pesticide spraying affecting its pollinator.

7. *Protection:*

The seven best sites and the majority of all occurrences in the state are on public lands with sensitive species policies in place, though this may not ensure long-term viability.

Needs:

8. *Inventory:*

Conduct more detailed field surveys as part of project clearance.

9. *Protection:*

See conservation strategy for priority framework and targets.

10. *Management:*

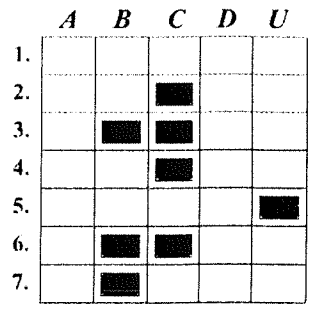
Control knapweed in Ravalli Co., disperse or defer grazing to permit seed set some years, and incorporate results of prescribed burn study in key plans and policies.

Other Considerations:

Management response research is underway, investigating species response to burning. Widespread population declines may or may not be reversible.

PHACELIA INCANA

Hoary Phacelia



GLOBAL STATUS SUMMARY

Global Rank: **G3**

There are at least 26 extant occurrences globally based on documented occurrences and numbers extrapolated from the counties/states it is reported to be found in.

Rarity:

1. *Number of Occurrences:*

There are seven occurrences in Montana (MNHP 1998). Wyoming NDD (1998) reports six extant locations and 2 vague historical records. Considered S2S4 in Nevada. Colorado and Utah are included in this species range. Occurrence data is not available for these states, however, it is reported from a total of 13 counties in these states (Weber and Wittmann 1996; Welsh et al. 1993; NNHP 1998).

2. *Abundance:*

There are approximately 5000 individuals found at the seven occurrences in Montana (MNHP 1998). Wyoming populations number in the low thousands in small areas (WYNDD 1998). The species occupies small areas even if numbers exceed 10,000.

3. *Global Range:*

This species is found in Rio Blanco County, Colorado (Weber and Wittmann 1996); and in Beaver, Juab, Kane, Millard, Sanpete, Tooele, and Uintah counties, Utah and also in Sweetwater and Carbon counties, Wyoming; five counties in Nevada (NNHP 1998); Beaverhead County, Montana and Idaho (Welsh et al. 1993).

Threats and Vulnerability:

4. *Fragility:*

Rocky slopes are fairly resilient.

5. *Trend:*

Unknown.

6. *Threats:*

Some locations are in areas of active mining and vulnerable to exotic annual species encroachment (MNHP 1998). Also the steep, slopes which support this species may be vulnerable to erosion under moderate to heavy use (WYNDD 1998).

7. *Protection:*

All seven occurrences in Montana are found on public land. The Wyoming occurrences are all on public lands and one is in the BLM's Sage Creek ACEC (WYNDD 1998).

Needs:

8. *Inventory:*

Need status information from Idaho and Nevada.

9. *Protection:*

At least one occurrence in each state where it is tracked.

10. *Management:*

Further consideration needs to be given to the management practices and other disturbances favoring the spread of weedy annuals.

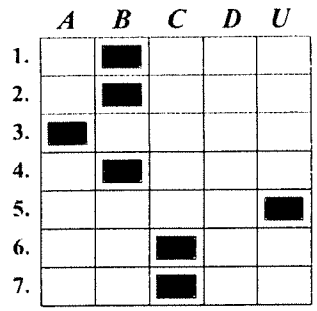
11. *Research:*

Other Considerations:

Idaho CDC does not track this species and does not have any occurrence data (1998). Montana NHP (1998) considers this species an S2. Nevada NHP does not track this species (1998).

PHACELIA INCANA

Hoary Phacelia



STATE STATUS SUMMARY

State Rank: **S2**

7 EOs; vulnerable to exotic species invasion.

Rarity:

1. *Number of Occurrences:*

There are 7 occurrences.

2. *Abundance:*

There is an estimated total of 7,000-14,000 individuals. Known occupied habitat is less than 200 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead County, where it is restricted to a small area from the Tendoy Range north to the Bannack area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has high fidelity to limestone scree and usually occurs in mountain mahogany communities. Habitat is relatively abundant in its range and the species occupies only a small portion of apparently potential habitat.

5. *Trend:*

No information on trends is available. It is an annual species and its populations may be prone to dramatic fluctuations in response to climatic cycles.

6. *Threats:*

The species may face few direct threats because its habitat is little impacted by current land uses, but is vulnerable to exotic species invasion, and possibly affected by mining.

7. *Protection:*

All occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. *Inventory:*

Conduct detailed field inventory as part of project planning.

9. *Protection:*

At least 1 occurrence in MT.

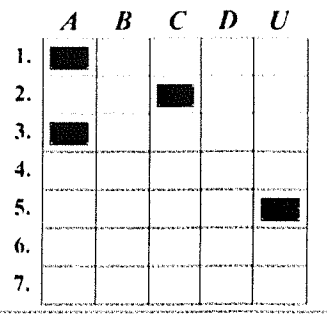
10. *Management:*

Consider the species in activities that affect the spread of noxious weeds and weedy annuals.

Other Considerations:

PRIMULA ALCALINA

Idaho Primrose



GLOBAL STATUS SUMMARY

Global Rank: **G1**

Known from eastcentral ID and historically known from adjoining MT. Portions of its wet meadow habitat have been degraded at several sites by past management activities, but all extant populations appear to be stable.

Rarity:

1. ***Number of Occurrences:***

   5 EOs in ID, 1 historic EO in MT.

2. ***Abundance:***

   Includes large populations of over 10,000, although the area spans less than 10,000 acres.

3. ***Global Range:***

   PRIMULA ALCALINA is a narrow endemic known only from a series of wet alkaline meadows at the headwaters of four spring-fed creeks in east-central Idaho. These include Summit Creek in Custer County, Texas Creek in Lemhi County, Birch Creek in Clark and Lemhi counties, and Eighteenmile Creek in Lemhi County. A historical (1936) collection is known from meadows near Monida, Montana, but has never been relocated and is considered extirpated.

Threats and Vulnerability:

4. ***Fragility:***

5. ***Trend:***

   Demographic monitoring provided basis for evaluating and planning grazing activity; generally decreasing fruit production but increasing recruitment.

6. ***Threats:***

7. ***Protection:***

   Includes nature preserves and easements.

Needs:

8. ***Inventory:***

   Extensive inventory in MT conducted by Lesica; consult on completeness now that he has visited ID populations. Field surveys in southernmost Beaverhead County may still be warranted to locate any extant populations.

9. ***Protection:***

   All large populations.

10. ***Management:***

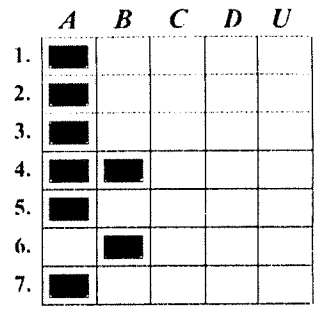
    Consult Idaho for optimal grazing management or alternative practices.

11. ***Research:***

Other Considerations:

PRIMULA ALCALINA

Idaho Primrose



STATE STATUS SUMMARY

State Rank: **SX**

Regional endemic with 1 historical EO in MT; believed extirpated.

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence, based on a 1936 collection.

2. *Abundance:*

No information on abundance was given on the specimen label. It is presumed scarce, if extant, based on lack of recent observations.

3. *Range in Montana:*

It is a regional endemic species historically known from one site in Beaverhead County. All other occurrences are in southeastern Idaho.

Threats and Vulnerability:

4. *Ecological Amplitude:*

In Idaho, the species is restricted to alkaline, spring-fed meadows; possibly a microhabitat within this general type.

5. *Trend:*

Surveys in the vicinity of the occurrence have not relocated the species and it is believed extirpated.

6. *Threats:*

The species is in the vicinity of a highway built since collection, and potentially threatened by activities which result in altered hydrology of its habitat, such as water diversion, spring development, and wetland filling. The species habitat is often subject to livestock grazing but the species is known to tolerate different levels of grazing.

7. *Protection:*

The occurrence is possibly on private land but precise location is unknown.

Needs:

8. *Inventory:*

Lesica reports visiting over 20 wetlands in search of it; get locations. Confirm and review his earlier opinion that it may be extirpated in MT.

9. *Protection:*

At least 1, if extant in Montana.

10. *Management:*

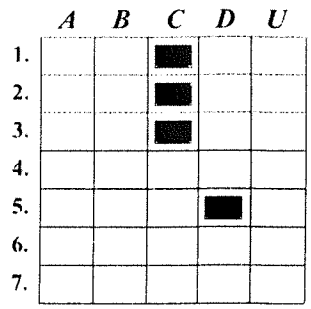
See Muir and Moseley paper on dual affects of livestock grazing, impacting fruit production but facilitating establishment.

Other Considerations:

Verification of the single Montana collection was made in 1998 by Sylvia Kelso, resolving questions on the validity of the species' presence in the state.

RORIPPA CALYCINA

Persistent-sepal Yellow-cress



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Known originally from only a few sites in Montana and Wyoming, and adjacent western Nebraska and North Dakota; only known to be extant and persisting in Wyoming where in recent decades (especially since 1980) this

Rarity:

1. *Number of Occurrences:*

More than 20 sites known in Wyoming, most located since 1980; the species has been colonizing banks of artificial reservoirs. Also known from 1 historic record in North Dakota, 3 historic records in Montana and 2 recent records that may be extirpated, plus one accidental introduction in NWT.

2. *Abundance:*

3. *Global Range:*

Disjunct populations in Wyoming (Carbon, Fremont, Park, Washakie, Bighorn Counties); Montana (Choteau and McCone cos.); collected near turn of century in Cascade, Custer and Yellowstone cos., Montana and near Montana-North Dakota border probably in McKenzie County, North Dakota. Also recorded from the Northwest Territories in northern Canada, where perhaps it is dispersed by migratory waterfowl (Rollins, 1993).

Threats and Vulnerability:

4. *Fragility:*

Unknown.

5. *Trend:*

Possibly increasing due to ability to colonize shores of artificial reservoirs; Rollins (1993) suggests that "it appears that the provision of suitable habitats by the construction of reservoirs has provided for an unusual increase in the number of populations of this species."

6. *Threats:*

A key question is the interchangeability of reservoir habitat for free-flowing riparian habitat. The accompanying change in water levels may threaten the taxon if there is not a seedbank or unaffected seed source; or may open up additional habitat. Tamarisk competition and shoreline developments are potential threats.

7. *Protection:*

Needs:

8. *Inventory:*

Inventory on drainages of historic occurrences in MT and adjoining ND.

9. *Protection:*

10. *Management:*

To be determined.

11. *Research:*

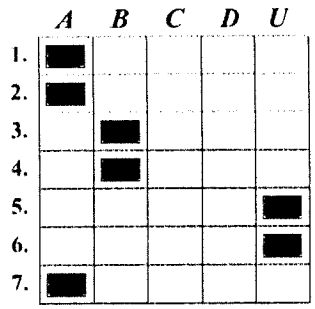
Determine habitat requirements, particularly responses to wa ter level changes.

Other Considerations:

May be dependent in part on artificial reservoirs (see Rollins, Cruciferae revision, 1993).

RORIPPA CALYCINA

Persistent-sepal Yellow-cress



STATE STATUS SUMMARY

State Rank: **SH**

Regional endemic with 5 EOs including 3 historic and 2 recent that may be extirpated

Rarity:

1. ***Number of Occurrences:***

   There are 5 occurrences. Three of these are based on specimens collected in the 1800's.

2. ***Abundance:***

   No information on abundance is given on collection labels except the most recent record in which the only plant observed was collected. The paucity of recent observations is presumed to indicate scarcity.

3. ***Range in Montana:***

   It is a regional endemic species known from Cascade, Chouteau, Custer and McCone counties, and possibly Yellowstone County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species of relatively narrow ecological amplitude, restricted to shorelines, and grows usually on sand though also reported in WY from gravel and mud.

5. ***Trend:***

   No occurrences have been relocated, but the adventive stockpond occurrence was searched for and is presumed extirpated.

6. ***Threats:***

   Habitat is potentially impacted by reservoir innundation, tamarisk competition, and livestock grazing and watering.

7. ***Protection:***

   All occurrences are on private lands and/or their precise location is unknown.

Needs:

8. ***Inventory:***

   Systematic baseline survey is needed throughout historic river habitat.

9. ***Protection:***

   At least 1 in MT, if extant.

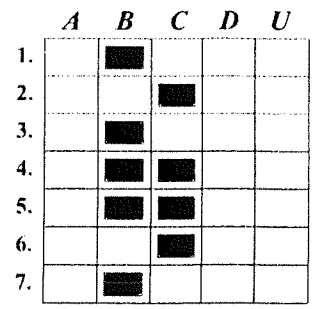
10. ***Management:***

    To be determined.

Other Considerations:

SHOSHONEA PULVINATA

Shoshonea



GLOBAL STATUS SUMMARY

Global Rank: **G2G3**

Endemic to southern Montana and the Absaroka and Owl Creek mountains of northwestern Wyoming. Restricted to relatively barren, calcareous soils, but locally abundant on these sites.

Rarity:

1. *Number of Occurrences:*

Eleven documented sites in Wyoming, possibly more in Owl Creek Mountains; 4 EOs in Montana, possibly more in Big Horn Mountains and Sheep Mountain (1999).

2. *Abundance:*

Many surveyed populations in Wyoming number in the tens of thousands of individuals; the total numbers in Montana occurrences is over 10,000 (1999). The total known occupied habitat relatively small; in Montana it is ca. 100 acres (1999).

3. *Global Range:*

Regional endemic restricted to Park and Fremont counties, Wyoming; adjacent Carbon County, Montana.

Threats and Vulnerability:

4. *Fragility:*

The habitat is dry and exposed, but represents a narrow zone affected by the balance between succession and natural disturbance.

5. *Trend:*

2 of 3 monitoring populations in Montana are stable; 1 is in slow decline.

6. *Threats:*

The habitat is relatively inaccessible and there are no known threats.

7. *Protection:*

Most are on public land and recognized in agency sensitive species programs, and one is part of Meeteetsee Spires ACEC.

Needs:

8. *Inventory:*

Survey in Owl Creek Mts, Wyoming, and expand survey in Pryor/Beartooth Mountains, Montana.

9. *Protection:*

At least one in each state if not mountain range.

10. *Management:*

Maintain long-term monitoring.

11. *Research:*

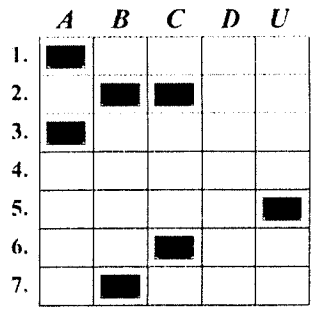
Identify natural mortality factors and recruitment variables.

Other Considerations:

It is the only species in its genus, increasing concern for its conservation. E. F. Evert recommends G3 rank; G2 recommended by MTNHP in 1987 status report based on need for additional survey.

SHOSHONEA PULVINATA

Shoshonea



STATE STATUS SUMMARY

State Rank: **S1**

Regional endemic with 4 EOs including large populations but over limited area.

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences.

2. *Abundance:*

There is an estimated total of 11,900-13,900 individuals. Total known occupied habitat is about 95 acres.

3. *Range in Montana:*

It is a regional endemic species known from Carbon County. The extremely small range of this species is primarily in Wyoming and barely extends into Montana.

Threats and Vulnerability:

4. *Ecological Amplitude:*

5. *Trend:*

Monitoring transects were established at two sites in 1993 and numbers were stable.

6. *Threats:*

The species faces few imminent threats but one population has mining claims. Habitat of some occurrences may be subject to light grazing by livestock and wild horses, but effects on the species are unknown. A rust infected a small proportion of Mystery Cave plants.

7. *Protection:*

Three occurrences are on public lands with sensitive species policies in place but the largest occurrence is on private land.

Needs:

8. *Inventory:*

Expanded field surveys are needed for additional EOs in south central Montana including the Pryor Mtns. and Sheep Mtn.

9. *Protection:*

At least 1 in MT.

10. *Management:*

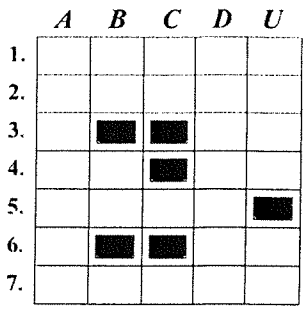
Revisit monitoring, considering mortality and recruitment patterns.

Other Considerations:

It is the only species of its genus, increasing concern for its conservation.

SPHAEROMERIA ARGENTEA

Chicken Sage



GLOBAL STATUS SUMMARY

Global Rank: **G3?**

Rare throughout its range.

Rarity:

1. ***Number of Occurrences:***

There are 13 EOs in Montana; considered S1S3 in Nevada.

2. ***Abundance:***

Rare in Nevada; estimated at 7,500-20,000 in Montana occupying less than 200 acres.

3. ***Global Range:***

Regional endemic known from Point of Rocks spring in Nevada; southwestern Beaverhead Co. in Montana, Idaho, Wyoming, Colorado.

Threats and Vulnerability:

4. ***Fragility:***

The dry, rocky habitat is resilient.

5. ***Trend:***

Unknown.

6. ***Threats:***

Few immediate threats, potentially impacted by mining, OHV use and noxious weeds.

7. ***Protection:***

Most occurrences in Montana are on BLM lands, where it is recognized as a sensitive species, but this does not insure their long-term viability.

Needs:

8. ***Inventory:***

Needs status information from Colorado and Idaho.

9. ***Protection:***

At least one in each state where it is tracked.

10. ***Management:***

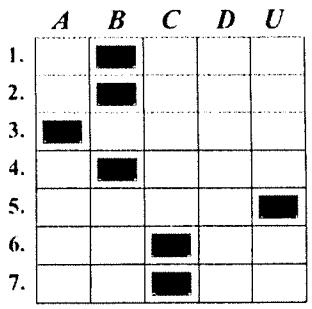
Document threats more thoroughly and re-evaluate needs.

11. ***Research:***

Other Considerations:

SPHAEROMERIA ARGENTEA

Chicken Sage



STATE STATUS SUMMARY

State Rank: **S2**

Regional endemic with 13 EOs from one area; no direct threats.

Rarity:

1. *Number of Occurrences:*

There are 13 occurrences.

2. *Abundance:*

There is an estimated total of 7,500-20,000 individuals. Total known occupied habitat is less than 200 acres.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of moderate ecological amplitude, usually occurring on limestone gravel pavement. In any case, its habitats are scattered and usually limited in area.

5. *Trend:*

No information on trends is available. The species was first discovered in the state in 1984 and no occurrences have been revisited.

6. *Threats:*

The species faces few threats though noxious weed invasion is a potential threat and mining activities are localized threats. Habitat of some occurrences is subject to light to moderate grazing by livestock; no direct impacts have been identified.

7. *Protection:*

Most occurrences, including the largest populations, are on public lands with sensitive species policies in place.

Needs:

8. *Inventory:*

Survey needed in the Beaverhead Mtns.

9. *Protection:*

At least 1 in MT.

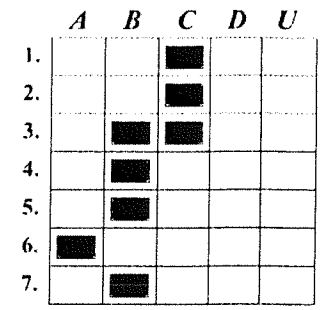
10. *Management:*

Determine whether there are indirect affects of grazing.

Other Considerations:

SPIRANTHES DILUVIALIS

Ute Ladies' Tresses



GLOBAL STATUS SUMMARY

Global Rank: **G2**

Known from lower-elevation wet meadow habitats in the interior western United States. The species was Federally listed as threatened in 1992 when it was only known from CO, UT, and NV. Since that time, it has

Rarity:

1. *Number of Occurrences:*

GET CURRENT NUMBERS. X occurrences in CO including X historic occurrences, X occurrences in ID, 11 occurrences in MT, 1 occurrence in Nebraska, 1 historic occurrence in Nevada, X occurrences in UT including X historic records, 1 occurrence in WA, and 4 occurrences in Wyoming for a total of X occurrences (1999). These numbers are high in all states with more than 5 occurrences, where populations that may have been fragmented or are hydrologically connected to others are treated as separate.

2. *Abundance:*

The total number of plants documented rangewide is 60,405 individuals, but occupying only 532 acres (1999). Most occurrences are made up of less than 200 individuals; there is one population of over 5,000 plants in Colorado. Most occurrence sites cover a small area; the exception is a UT occurrence spanning over 20 miles of river valley.

3. *Global Range:*

SPIRANTHES DILUVIALIS occurs in three general areas of the interior western United States where it is sparse and highly restricted on the landscape: (1) near the base of the e. slope of the Rocky Mountains and intermontane valleys in nc. and c. Colorado., eastcentral Idaho, sw. Montana, and ec. and se. Wyoming; also downstream in w. Nebraska; (2) the Uinta Basin and elsewhere in the upper Colorado River drainage of e. Utah; and (3) near the w. base of the Wasatch Mountains and elsewhere in the e. Great Basin of w. UT (historically in e. Nevada); also disjunct in the Okanogon Highlands of Washington. Counties of distribution include Colorado: Clear Creek, Jefferson, Boulder, and Larimer cos., possibly in Moffat County too. Utah: Daggett, Garfield, Wayne, Utah, Salt Lake, Weber and Toole cos. Nevada: Lincoln county (historical record), Montana: Beaverhead, Gallatin, Jefferson, and Madison cos. Idaho: Bonneville, Jefferson cos., Wyoming: Converse, Goshen, Laramie and Niobrara cos., Nebraska: Sioux County, and Washington: Okanogan Co.

Threats and Vulnerability:

4. *Fragility:*

Requires stable moisture throughout growing season as well as a seasonal reduction or season-long sparse vegetation cover within wet meadow habitat, i.e., dynamic or low-competition conditions for which too little disturbance can have as great a long-term impact as too much disturbance in an already fragile wetland setting.

5. *Trend:*

Presumed extirpated at 6 collection sites in parts of range including the only one in Nevada; but with limited historical data for gauging losses. Rocky Mountain Front habitat in Colorado may have been the most extensively converted. Population monitoring studies in Colorado and Utah project long-term declines if not extirpations in both riparian corridor and wet meadow settings and under current land use practices without conservation intervention.

6. *Threats:*

Threatened by many forms of water developments, intense domestic livestock grazing, haying, exotic species invasion, fragmentation and urbanization in particular. Vulnerable in parts of range to loss of pollinators, and control of rodent predators.

7. *Protection:*

One of the largest populations may receive some degree of protection within the City of Boulder Open Space, Colorado. Another, smaller population protected in the Utah portion of Dinosaur National Monument.

Needs:

8. *Inventory:*

To be completed.

9. *Protection:*

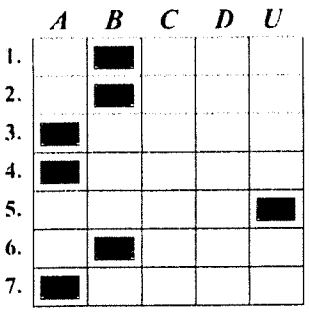
To be completed.

10. *Management:*

To be completed.

SPIRANTHES DILUVIALIS

Ute Ladies' Tresses



STATE STATUS SUMMARY

State Rank: **S2**

11 EOs; high habitat specificity with potential threats.

Rarity:

1. *Number of Occurrences:*

There are 11 occurrences, but a couple may be part of a single aggregate, some have very low numbers, and 2 are in disturbance settings with limited contribution to species' conservation.

2. *Abundance:*

Flowering stem counts (1996+1997) total ca. 1,400 plants. This does not include vegetative plants or seasonally-dormant plants; monitoring has provided the basis for projecting totals at 2,000+.

3. *Range in Montana:*

It is known from four counties in Montana in valleybottom habitat with wetland features constrained to a set of soil series.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Restricted to a microhabitat within an uncommon form of wetland.

5. *Trend:*

It has only recently been documented from the flora, and population trend data as available from one monitoring site is confounded by seasonal dormancy.

6. *Threats:*

While valleybottom communities are highly threatened in general, the species' habitat is moderately threatened by noxious weed invasion, some but not all livestock grazing regimes, and water use practices. The EOs with lowest numbers generally reflect disturbance.

7. *Protection:*

Part or all of 3 EOs are on state land, but they are not protected as such, nor are they conservation priorities.

Needs:

8. *Inventory:*

Review will be needed of the potential habitat map when it is completed, identifying all areas where aerial photointerpretation and site visits were least complete. boundaries have not been delimited. Inventory priority beyond that depends on species' status and

9. *Protection:*

The three largest EOs warrant conservation consideration.

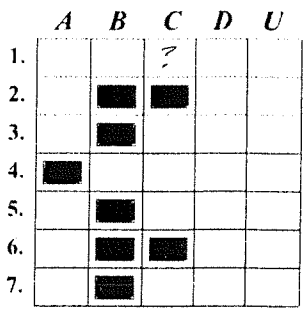
10. *Management:*

Noxious weed control at 2 of the 3 protection priority sites, and hydrological consultation, are needed. Related research needs include identification of pollinator and its habitat requirements, comparison of rangewide genetic resources, and conveyance of

Other Considerations:

SULLIVANTIA HAPEMANII VAR HAPEMANII

Wyoming Sullivantia



GLOBAL STATUS SUMMARY

Global Rank: **G3T3**

Regional endemic in fragile habitat with fewer than 100 occurrences.

Rarity:

1. ***Number of Occurrences:***

   9 EOs in Montana.

2. ***Abundance:***

   This species is localized dominant in the best-developed, intact habitats but is extremely restricted to small areas. There is only 1 occurrence in MT approaching or exceeding 1 acre.

3. ***Global Range:***

   Regional endemic restricted to Idaho, Big Horn and Carbon cos., Montana, and Wyoming.

Threats and Vulnerability:

4. ***Fragility:***

   Extremely fragile and dependent on stable, saturated soil conditions high in calcium carbonate, associated with springs, seeps and streamcourses in an arid landscape; readily torn apart by any trampling.

5. ***Trend:***

   Population declines and possible extirpations are inferred in Bighorn Canyon NRA with flooding when Yellowtail Dam was built, marina well development, and with drought years at the north end; also with highway and grazing history further south.

6. ***Threats:***

   Potentially threatened by water developments, concentrated stock use, and recreational use. The biggest populations in Montana are the most isolated.

7. ***Protection:***

   Protected at Tensleep Preserve in Wyoming. All Montana EOs are on Bighorn Canyon NRA, but this does not insure their long-term viability.

Needs:

8. ***Inventory:***

   It has not been surveyed on Crow Reservation.

9. ***Protection:***

   Identify largest occurrences throughout its range for dual species/community protection.

10. ***Management:***

    Avoid trampling and water diversion.

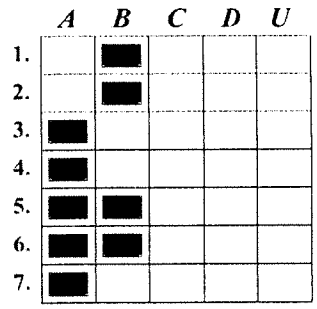
11. ***Research:***

Other Considerations:

This species is locally dominant at well-developed spring habitats and also warrants plant community consideration.

SULLIVANTIA HAPEMANII VAR HAPEMANII

Wyoming Sullivantia



STATE STATUS SUMMARY

State Rank: **S2**

9 EOs in one limited area, restricted to small, fragile aquatic habitats.

Rarity:

1. *Number of Occurrences:*

There are 9 EOs.

2. *Abundance:*

Over half of the occurrences have an estimated total of 1,000+ individuals, and the species is sometimes dominant in its specialized habitat, but the area occupied is very small.

3. *Range in Montana:*

It is a regional endemic species known from Carbon and Big Horn Counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is restricted to specialized limestone seeps and streams fed by them, a fragile habitat.

5. *Trend:*

Degraded EOs and absence from disturbed suitable settings indicate that this species was more widespread than the present. It is possible that occurrences were flooded when Yellowtail Dam was built.

6. *Threats:*

The species is potentially threatened by activities which would change the hydrology of canyon seeps (e.g. spring development for livestock and irrigation) or recreational use, and possibly by climate changes.

7. *Protection:*

All occurrences are in the Big Horn Canyon National Recreation Area, but sensitive species policies are not in place.

Needs:

8. *Inventory:*

All known potential habitat has been surveyed on Bighorn Canyon NRA: none on Crow Reservation.

9. *Protection:*

At least 1 in MT.

10. *Management:*

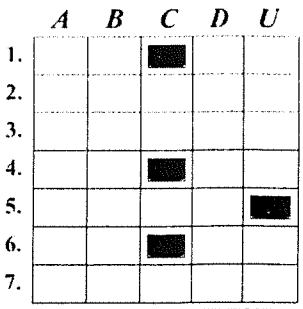
Avoid trampling and changes to hydrology.

Other Considerations:

It is the only member of its genus in Montana increasing concern for its conservation.

TOWNSENDIA NUTTALLII

Nuttall Townsend-daisy



GLOBAL STATUS SUMMARY

Global Rank: **G3**

Regional endemic, possibly with low numbers, but no known threats.

Rarity:

1. ***Number of Occurrences:***

There are 10 EOs in MT and 1 historic record (1999) and 78 collections in WY (Atlas 1999). It flowers early and may be overlooked.

2. ***Abundance:***

Populations are usually in low densities, and low numbers are estimated for those considered, while few populations have been completely surveyed.

3. ***Global Range:***

Regional endemic known from at least 12 cos. in western Wyoming; also Beaverhead Co. and historically from Granite Co., Montana.

Threats and Vulnerability:

4. ***Fragility:***

Harsh, dry habitat.

5. ***Trend:***

Unknown.

6. ***Threats:***

The early phenology and low growth form make it relatively unaffected by grazing, but it is potentially impacted by noxious weeds and mining.

7. ***Protection:***

Nearly all occurrences are on public land in Montana but this does not insure long-term viability.

Needs:

8. ***Inventory:***

Systematically survey in Garnet Range, and initiate survey elsewhere.

9. ***Protection:***

10. ***Management:***

None identified.

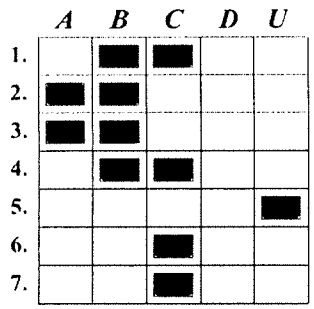
11. ***Research:***

Reconsider status in Montana.

Other Considerations:

TOWNSENDIA NUTTALLII

Nuttall Townsend-daisy



STATE STATUS SUMMARY

State Rank: **S3**

Limited distribution. 9+ known occurrences in limestone foothills of sw MT.

Rarity:

1. ***Number of Occurrences:***

   There are at least 11 known occurrences, and more are predicted based on the species early ephemeral flowering, inconspicuous nature, and abundant potential habitat.

2. ***Abundance:***

   Populations usually consist of few plants widely scattered over large areas. Population estimates are difficult and few, if any, occurrences have been completely surveyed.

3. ***Range in Montana:***

   It is a regional endemic species known from Beaverhead and Granite Counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species of relatively broad ecological amplitude, occurring in a few abundant plant communities, and on a variety of rock types.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   Habitat is sometimes subject to light grazing by livestock, but the species is probably not adversely affected.

7. ***Protection:***

   Nearly all occurrences are on public lands, and the species is not threatened by current land uses.

Needs:

8. ***Inventory:***

   Continue documenting the species in the course of fieldwork or project clearances.

9. ***Protection:***

   At least 1 in MT; review adequacy of current protection.

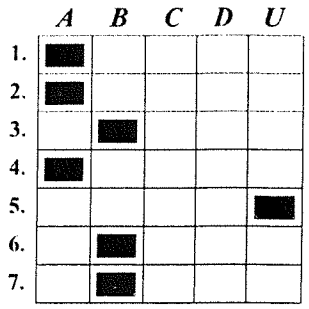
10. ***Management:***

    None identified.

Other Considerations:

ADOXA MOSCHATELLINA

Musk-root



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs; limited numbers, potentially affected by many land management activities.

Rarity:

1. *Number of Occurrences:*

There are 6 occurrences and 2 are historical collections. The species is very inconspicuous and may be more common than current records indicate.

2. *Abundance:*

Highest total number of flowering stems was 380; most records do not include frequency or population size. Number of genets is probably less due to clonal reproduction.

3. *Range in Montana:*

It is a disjunct circumboreal species known from Granite, Jefferson, Carbon, and Stillwater counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Habitat of the 2 historical occurrences is unknown. Appropriate cool, moist, shaded, "refugia" habitats are likely to be small and widely scattered across the species range in the state.

5. *Trend:*

Historical occurrences have not been relocated in Stillwater County. One occurrence which has had repeated visits has been persistent at the site for over 30 years, with highest numbers reported on the most recent visit although this is probably due to increased survey intensity.

6. *Threats:*

The species is potentially threatened by canopy removal and ground disturbance or resulting competition following fires and logging.

7. *Protection:*

Recent records are on public land with sensitive species policies in place. The exact locations and land ownership of the two historical occurrences are not known.

Needs:

8. *Inventory:*

Relocate Stillwater County population, and refine habitat requirements.

9. *Protection:*

At least 1, to preserve species in Montana.

10. *Management:*

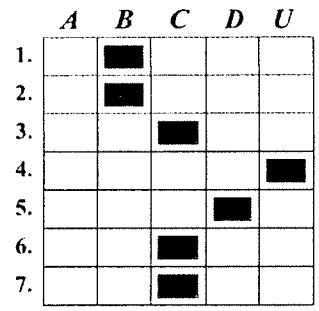
Susceptible to changes in canopy, surface stability, and vegetation conditions fostering non-native or weedy species invasions.

Other Considerations:

It is the only species in its family, increasing concern for its conservation.

AMBROSIA ACANTHICARPA

Flat-spine Bursage



STATE STATUS SUMMARY

State Rank: **SU**

Unresolved as vulnerable. Few, widely-distributed collections; the only recent detailed one noted it as common on overgrazed dunes.

Rarity:

1. ***Number of Occurrences:***

There are at least 6 occurrences. All but one are based on specimens collected in 1951 or before. There are likely to be more due to the species broad range and potential for increase under heavy disturbance.

2. ***Abundance:***

The one recently (1993) surveyed occurrence had over 1000 individuals and occupied about 40 acres of habitat. No information on abundance is available for other occurrences.

3. ***Range in Montana:***

It is a peripheral species known from Cascade, Gallatin, Garfield, Hill, and Rosebud counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

Information on habitat is available only for the one recently surveyed occurrence.

5. ***Trend:***

The species increases under heavy grazing by sheep.

6. ***Threats:***

The species is apparently not threatened by current land uses.

7. ***Protection:***

All occurrences are on private land or precise location and land ownership are unknown, but the species does not appear in need of protection.

Needs:

8. ***Inventory:***

Include among targets for inventories in sandy plains or lowlands to better-document distribution and vulnerability.

9. ***Protection:***

To be determined.

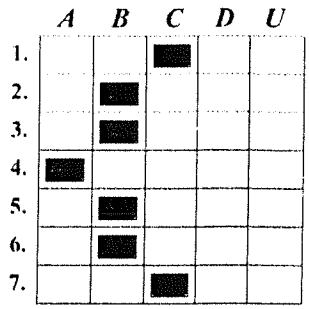
10. ***Management:***

Reconsider status if there are healthy populations under undisturbed conditions.

Other Considerations:

AMERORCHIS ROTUNDIFOLIA

Round-leaved Orchis



STATE STATUS SUMMARY

State Rank: **S2**

27 EOs; with high habitat specificity and affected by many land management practices.

Rarity:

1. *Number of Occurrences:*

There are 27 occurrences.

2. *Abundance:*

Total number of individuals conservatively estimated to be over 16,000, but total occupied habitat may be less than 150 acres. Vegetative reproduction may be common so number of genets may be lower than reported stem counts. Local abundance varies across state range of the species.

3. *Range in Montana:*

It is a boreal species known from Flathead, Glacier, Lewis and Clark, Lincoln, Pondera, Powell, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with high habitat specificity, restricted to rare habitats constrained by combination of substrate geology and hydrology.

5. *Trend:*

One occurrence on private land has declined due to road construction across its habitat, but trends of other occurrences are unknown. Higher numbers have been found by revisits to occurrences but this was due to discovery of additional subpopulations.

6. *Threats:*

Many occurrences are in habitat which is prone to disturbance from logging activity and grazing.

7. *Protection:*

All but two occurrences are on public lands with sensitive species policies in place, including three in the Bob Marshall Wilderness Area and one in Glacier National Park.

Needs:

8. *Inventory:*

Additional inventory is needed in the Front Range.

9. *Protection:*

At least 1 in the Rocky Mountain Front Range and 1 in nw. Montana.

10. *Management:*

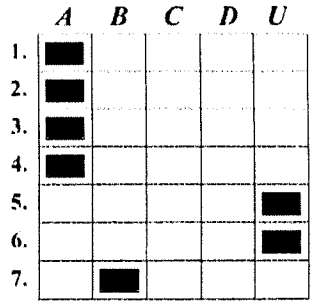
Re-read ecodata plots in Green Timber Basin and Beaver Creek to determine timber management impacts. Study modifications to logging and grazing plans to determine whether impacts can be ameliorated.

Other Considerations:

Orchids are often ecologically fragile due to habitat specificity, mycorrhizal relations, and specialized pollinators.

ARABIS DEMISSA VAR LANGUIDA

Daggett Rock Cress



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs; status, trend and threat information wanting.

Rarity:

1. ***Number of Occurrences:***

There are 2 occurrences; in addition to 3 vegetation plots from the Bighorn Canyon that will be treated as occurrences.

2. ***Abundance:***

The species was described as "common" at one site and "uncommon" at the other.

3. ***Range in Montana:***

It is a peripheral species known from Carbon County in the Pryor Mountains.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

The two occurrences have the same associated species noted on collection labels, both occur in canyon bottom habitat which is limited in extent, and they are in an area with a unique climate.

5. ***Trend:***

The species was recently discovered in the state (1991) and no data on trends are available.

6. ***Threats:***

Information on threats is not available.

7. ***Protection:***

Both occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. ***Inventory:***

It is appropriate to include this species as inventory target in any spring botany work in the Pryor Mts.

9. ***Protection:***

To be determined.

10. ***Management:***

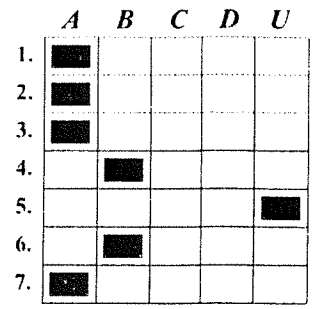
To be determined.

Other Considerations:

It is a newly-documented addition to the state flora.

ASCLEPIAS OVALIFOLIA

Ovalleaf Milkweed



STATE STATUS SUMMARY

State Rank: **S1**

1 EO with short-term declines under grazing

Rarity:

1. *Number of Occurrences:*

There is one occurrence.

2. *Abundance:*

There is an estimated total of 200-400 stems occupying about 1 acre of habitat. Number of genets is probably less, due to spread by rhizomes and low seed production.

3. *Range in Montana:*

It is a peripheral species known from Carter County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The occurrence is on a sandy alluvial terrace with pine woodland/snowberry thicket ecotone habitat. Similar habitat is widely distributed but constitutes a very small percentage of the landscape.

5. *Trend:*

Decline in number of stems caused by grazing was observed between July and August 1994, the only year with data available. Long term trends are not known.

6. *Threats:*

The species is potentially threatened by current grazing practices.

7. *Protection:*

The occurrence is on public land it is not recognized on agency lists.

Needs:

8. *Inventory:*

Add to targets for any botany studies in Sioux District - Custer National Forest.

9. *Protection:*

To be determined.

10. *Management:*

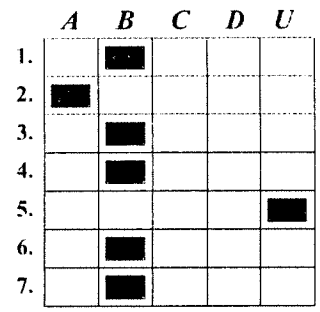
Revisit the 1 EO to determine trend with fire succession and grazing.

Other Considerations:

Recently documented addition to state flora.

ASCLEPIAS STENOPHYLLA

Narrowleaf Milkweed



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs including tiny populations; some EOs potentially threatened by grazing.

Rarity:

1. ***Number of Occurrences:***

   There are six occurrences.

2. ***Abundance:***

   Less than 400 individuals have been observed in the state but plants are often widely scattered so numbers may be underestimated. Number of genets may be less due to rhizomatous habit and low levels of seed production.

3. ***Range in Montana:***

   It is a peripheral species known from Carter and Rosebud Counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species restricted to sandy habitats which are widespread but comprise a small portion of the landscape within the species range.

5. ***Trend:***

   The species appears to be stable at one high quality, ungrazed site at Medicine Rocks State Park. Populations in grazed habitat have not been revisited.

6. ***Threats:***

   The species is potentially threatened by sheep and cattle grazing at some locations.

7. ***Protection:***

   All occurrences are on public lands, including 3 on BLM lands with sensitive species policies in place, but this may not insure their long-term viability. The occurrence in Medicine Rocks State Park may be well protected although no official policy is in place.

Needs:

8. ***Inventory:***

   Add to inventory targets in southeastern Montana.

9. ***Protection:***

   At least 1 in Montana.

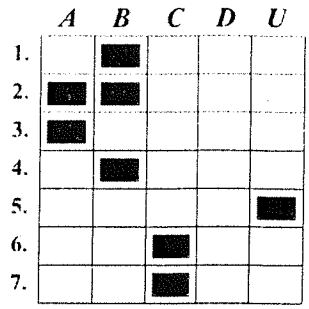
10. ***Management:***

    Address grazing impacts identified for two populations.

Other Considerations:

ASTRAGALUS ARETIOIDES

Sweetwater Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

7 known EOs; small range in Montana.

Rarity:

1. ***Number of Occurrences:***

There are 7 occurrences; 2 may merit merging.

2. ***Abundance:***

Population estimates, given for three occurrences, range from 40 to 100 individuals per site. The species was described as "common" and "locally common" at two other sites; magnitudes unknown.

3. ***Range in Montana:***

It is a regional endemic species known from Bighorn and Carbon Counties, in the Pryor Mountain/Bighorn Canyon area.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

Most sites are on a single rock type (limestone) with similar topographic positions, soils, and associated vegetation, but a single outlier at lower elevation on sandstone is evidence of somewhat broader ecological amplitude.

5. ***Trend:***

There are no data on population trends.

6. ***Threats:***

Habitat of at least some occurrences is remote and undisturbed and the species faces few threats.

7. ***Protection:***

Most occurrences are on public lands including two within the Lost Water Canyon Research Natural Area (FS), and most others on BLM lands where it is recognized as a watch species.

Needs:

8. ***Inventory:***

Survey for additional EOs and relocate Grapevine Dome population.

9. ***Protection:***

At least 1 in Montana.

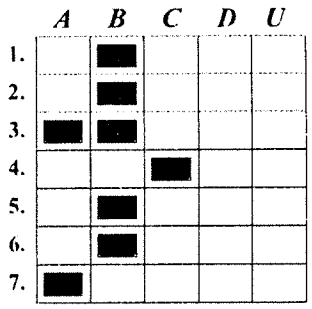
10. ***Management:***

To be determined.

Other Considerations:

ASTRAGALUS CONVALLARIUS VAR CONVALLARIUS

Lesser Rushy Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

10 EOs; potentially threatened by subdivision, noxious weeds, and mining.

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences, but a couple without precise location data are close to and may merit merging with other occurrences.

2. *Abundance:*

The species was described as common at a couple sites, but as sparse and widely scattered at others.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Broadwater, Jefferson, and Lewis and Clark counties. Its distribution in the state is limited to a narrow range near where the latter 3 counties meet, and to a single disjunct occurrence in Beaverhead County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has relatively broad ecological amplitude, with habitat extending across a number of common vegetation types and spanning a broad elevational range.

5. *Trend:*

The species is presumed to have declined due to impacts of urban development and mining adjacent to currently occupied habitat.

6. *Threats:*

Habitat on private property is potentially threatened by urban development. At least one occurrences is imminently threatened by invasion of exotic weeds.

7. *Protection:*

A couple occurrences are on public lands, and a couple more may be partially on public lands, but sensitive species policies are not in place.

Needs:

8. *Inventory:*

Get Fort Harrison survey data from Westech and re-evaluate status. Include it as a survey target in the Centennial Valley.

9. *Protection:*

To be determined.

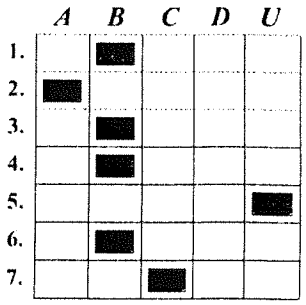
10. *Management:*

Spotted knapweed and leafy spurge are invading this species' habitat in the Helena Valley.

Other Considerations:

ASTRAGALUS GEYERI VAR GEYERI

Geyer's Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

11 EOs; susceptible to weed invasion and other habitat degradation with grazing.

Rarity:

1. *Number of Occurrences:*

There are 11 occurrences, but two are known only by historical collections, one of these with uncertain identification.

2. *Abundance:*

There is an estimated total of 2,500-4,500 or more individuals, but known occupied habitat is less than 20 acres.

3. *Range in Montana:*

It is a regional endemic species known from Carbon, Custer, Dawson, and Garfield counties. The Custer and Dawson County occurrences are based on specimens collected in the early 1900's.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has high local fidelity to shrub dominated communities on sandy alluvium in Carbon County, but single occurrences elsewhere are along a road and in sandy colluvium below an upland outcrop.

5. *Trend:*

Population declines, possibly due to drought cycles, have been observed at two sites, but long term trends are unknown.

6. *Threats:*

The species is potentially threatened by livestock grazing at some sites, especially during population decline in drought years, and habitat is threatened by weed invasions at some sites.

7. *Protection:*

Five occurrences in Carbon County, including the largest known populations, are on public lands with sensitive species policies in place. Occurrences in other counties are on public lands without sensitive species policies in place or precise location and land ownership are unknown.

Needs:

8. *Inventory:*

Add to inventory targets in southeastern Montana.

9. *Protection:*

To be determined.

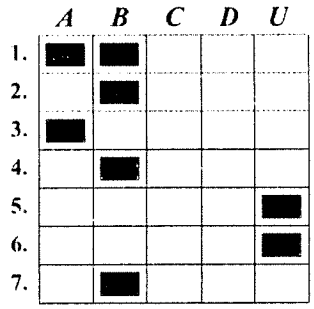
10. *Management:*

Control and document weed invasion.

Other Considerations:

ASTRAGALUS OREGANUS

Wind River Milkvetch



STATE STATUS SUMMARY

State Rank: **S1**

7 EOs over limited area; threats and trends unknown

Rarity:

1. ***Number of Occurrences:***

   There are 7 occurrences.

2. ***Abundance:***

   Total individuals is estimated greater than 5,000, but total occupied habitat may be less than 20 acres.

3. ***Range in Montana:***

   It is a regional endemic known from Carbon County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The species occurs in a couple of common vegetation community types in a variety of landscape positions, but may be restricted by local climate.

5. ***Trend:***

   Estimated numbers remained stable at one occurrence visited 3 times (1991-1995), but no information on long term trends is available. Flowering and fruit-set are sporadic.

6. ***Threats:***

   Habitat of most occurrences may be subject to grazing, but species response is unknown.

7. ***Protection:***

   Most occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. ***Inventory:***

   Survey in the course of Carbon Co. project clearances.

9. ***Protection:***

   At least 1 in MT.

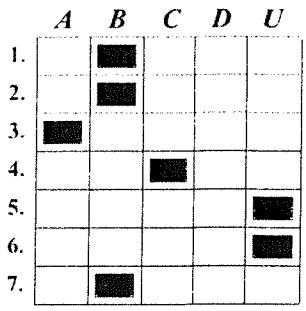
10. ***Management:***

    Determine palatability and livestock grazing impact.

Other Considerations:

ASTRAGALUS RACEMOSUS VAR LONGISETUS

Raceme Milkvetch



STATE STATUS SUMMARY

State Rank: **S2**

9 EOs; potentially threatened by grazing despite being a selenium accumulator

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Rarity:

1. *Number of Occurrences:*

There are 9 occurrences, but one is based on a 1938 collection with unmappable location.

2. *Abundance:*

Only one occurrence is known to have greater than 1000 plants, but the species is described as common at two occurrences without population estimates. Two occurrences consist of fewer than 10 plants each.

3. *Range in Montana:*

It is a peripheral species known from Carter and Fallon Counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in more than one of the most common plant communities within its range, but is restricted to selenium soils.

5. *Trend:*

No occurrences have been revisited.

6. *Threats:*

The species may be threatened by livestock grazing under some conditions. It can lead to locosim resulting in strong selection by livestock and resulting physiological problems, thus its presence, along with other selenium accumulating plants, may make range undesirable for grazing livestock. It has not been found in heavily grazed areas.

7. *Protection:*

Five occurrences, including one large population, are on public lands with sensitive species policies in place, but this may not insure their long term viability.

Needs:

8. *Inventory:*

Survey in the course of project clearance.

9. *Protection:*

To be determined.

10. *Management:*

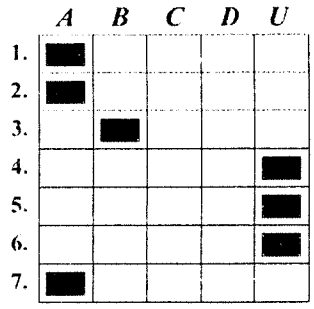
Avoid placing rangeland improvements near this species.

Other Considerations:

All Montana specimens have been determined as A. RACEMOSUS VAR RACEMOSUS except EO#001 at RM; it is possible that A. RACEMOSUS VAR LONGISETUS is present. state.

ATRIPLEX TRUNCATA

Wedge-leaved Saltbush



STATE STATUS SUMMARY

State Rank: **SH**

Not collected in Montana since 1952.

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences, all based on specimens collected before 1952.

2. *Abundance:*

Described as abundant at one site but in small area of habitat. No other data are available.

3. *Range in Montana:*

It is known from Beaverhead, Lake, and Lewis and Clark counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Habitat information is available for only one occurrence. It may be limited to low competition sites with alkaline soils.

5. *Trend:*

There has been little effort to relocate the historic occurrences; precise locations unknown. As a annual species its populations may undergo dramatic fluctuations, possibly leading to local extinctions. However, it may remain in the state undetected as it is a late season species of an under-collected genus.

6. *Threats:*

No information on threats is available. The Helena Valley has undergone widespread vegetation conversion particularly among wetland habitats.

7. *Protection:*

One occurrence is on Red Rock Lakes National Wildlife Refuge, but its persistence there is unknown. The others are on private lands and their precise locations are unknown.

Needs:

8. *Inventory:*

Inventory in Centennial Valley, Flathead Valley, and Helena Valley.

9. *Protection:*

To be determined.

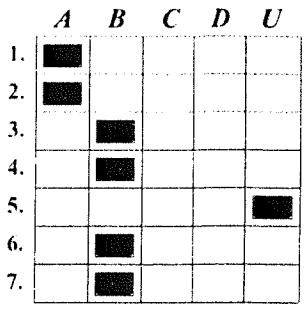
10. *Management:*

To be determined.

Other Considerations:

BACOPA ROTUNDIFOLIA

Roundleaf Water-hyssop



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs in localized habitats; threats and trends unknown

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences, and one is based on a 1891 collection.

2. *Abundance:*

The species was described as common at three sites, but is confined to small wetland features.

3. *Range in Montana:*

It is a peripheral species known from Cascade, Fergus, Garfield, and Phillips counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is adapted to both manmade and natural wetlands which are widely scattered features across its range.

5. *Trend:*

No occurrence has been revisited. Its occurrence in stockponds demonstrates colonizing ability and possibly resistance to damage from livestock.

6. *Threats:*

Two occurrences are manmade stockponds. Not enough is known about habitat requirements to interpret whether this reflects its status as a pioneer species w/o sensitivity to livestock and water management disturbance, or as an increaser under disturbance.

7. *Protection:*

One occurrence is on public land with sensitive species policies in place, including one ACEC occurrence.

Needs:

8. *Inventory:*

Inventory in plains wetlands.

9. *Protection:*

To be determined.

10. *Management:*

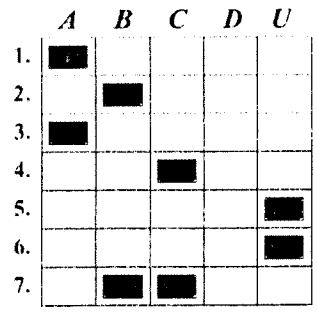
To be determined.

Other Considerations:

It may be more common than records indicate due to low survey intensity of its habitat.

BALSAMORHIZA MACROPHYLLA

Large-leafed Balsamroot



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including two large populations; with potential grazing threat.

Rarity:

1. *Number of Occurrences:*

There are five occurrences.

2. *Abundance:*

There are over 10,000 estimated individuals, but occupied habitat may be less than 500 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Gallatin, and Madison counties, found in three mountain ranges, but constituting a small total area near the southern border of the state.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is found in a couple of habitat types which are relatively abundant.

5. *Trend:*

Searches for historical occurrences have relocated three large populations, possibly evidence for stability since the 1930's, but one could not be found and may have declined or become extinct.

6. *Threats:*

The species may be threatened by grazing under some conditions, but persists under certain grazing regimes. One occurrence may be threatened by erosion and trampling associated with livestock and recreation trails.

7. *Protection:*

All but one occurrences, including one of the largest, are on public lands with sensitive species policies in place. One is on public lands without sensitive species policies in place.

Needs:

8. *Inventory:*

Expanded survey in the Centennial Mountains is needed.

9. *Protection:*

To be determined

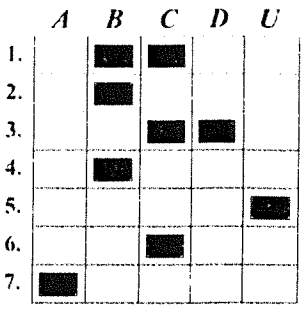
10. *Management:*

Terms of avoiding grazing impact remain to be determined.

Other Considerations:

BIDENS COMOSA

Threelobed Beggarticks



STATE STATUS SUMMARY

State Rank: **S2S3**

There are 3 EOs and reports that it is frequent on the Yellowstone R., with no immediate threats.

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences in addition to observations that it is frequent on the Yellowstone River corridor.

2. *Abundance:*

The species was described as "rare", "scattered", and "few" at the three respective sites, but its habitat is recurrent.

3. *Range in Montana:*

It is a peripheral species collected from Chouteau, Hill, and Richland counties. In addition, Lesica and Shelly (1991) report it from Phillips Co. - no known voucher. It has also been observed from at least Yellowstone, Treasure, and Custer cos.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is confined to riparian habitats, which are contiguous, but represent a small proportion of the mostly arid landscape across its range.

5. *Trend:*

No occurrence has been revisited. It occurs in early successional stages that are flooded and little-affected by tamarisk invasion.

6. *Threats:*

There is no information concerning threats. Other species of BIDENS increase with disturbance, but there is little information available on this species. Long-term change in the Yellowstone River flooding regime could reduce habitat.

7. *Protection:*

One occurrence may be in a county park, the others are private, or within river highwater mark.

Needs:

8. *Inventory:*

Documentation of distribution is needed.

9. *Protection:*

None identified.

10. *Management:*

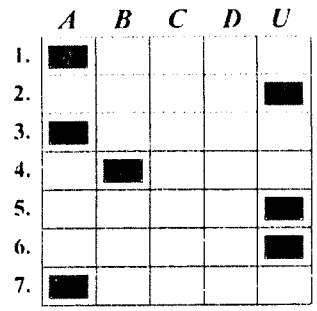
May require natural hydrological regimes.

Other Considerations:

The species may have high colonization ability due to specialized long distance dispersal mechanisms.

BIDENS VULGATA VAR SCHIZANTHA

Tall Bur-marigold



STATE STATUS SUMMARY

State Rank: **SU**

Unresolved as vulnerable. Associated with adventive species at the single known collection site.

Rarity:

1. ***Number of Occurrences:***

   There is 1 occurrence.

2. ***Abundance:***

   No information on abundance is available.

3. ***Range in Montana:***

   It is a peripheral species known from Richland County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   Its drying mudflat habitat may be common around stockponds, but comprises a very small area in a predominantly arid landscape.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   No information on threats is available.

7. ***Protection:***

   The occurrence is on private land.

Needs:

8. ***Inventory:***

   Distribution documentation is needed.

9. ***Protection:***

   To be determined, if there are stewardship needs.

10. ***Management:***

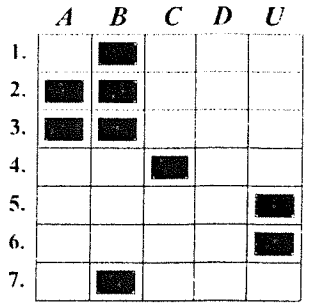
    To be determined.

Other Considerations:

The species was associated with exotic weeds, raising the possibility that it may increase under disturbance. The species may have high colonization ability due to specialized long distance dispersal mechanisms.

CAMISSONIA ANDINA

Obscure Evening-primrose



STATE STATUS SUMMARY

State Rank: **S1**

8 EOs including two which are likely to be extirpated

Rarity:

1. *Number of Occurrences:*

There are 8 occurrences, but two are based on historical collections.

2. *Abundance:*

Estimated total individuals at 5 recently (1991) surveyed sites is greater than 2,000 plants, but occupied habitat is less than 20 acres. No data are available for the other occurrences.

3. *Range in Montana:*

It is a peripheral species known from Carbon, Missoula, and Ravalli counties. The single Ravalli County record is a 1912 collection with uncertain location data, possibly taken from Idaho, and the single Missoula County occurrence is a collection from 1927.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a variety of sandy habitats in Carbon County, and is known from very different habitat in western Montana.

5. *Trend:*

The species has not been relocated since 1934 at Mt. Sentinel in Missoula County, a well botanized site, however it is an inconspicuous plant. It could not be found on a 1993 revisit to one site where <100 plants were observed 2 years earlier, but this was attributed to a dry year. The species is an annual and seeds may remain dormant under unfavorable conditions, and populations may be prone to drastic year-to-year fluctuations.

6. *Threats:*

The species may be threatened by invasion of its habitat by exotic weeds at one site, and in general by soil destabilization as with heavy livestock use.

7. *Protection:*

All Carbon County occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

Known only from historic records in western MT.

9. *Protection:*

Protect Pryor Mtns. and consider western MT needs pending inventory.

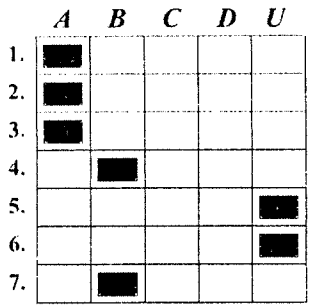
10. *Management:*

Management needed to avoid weed invasion or soil destabilization.

Other Considerations:

CAMISSONIA PARVULA

Small Camissonia



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs; possibly affected by land management activities

Rarity:

1. ***Number of Occurrences:***

   There are 2 occurrences.

2. ***Abundance:***

   Total individuals observed in the state is estimated between 100 and 1,000. Total known occupied habitat is about 2 acres.

3. ***Range in Montana:***

   It is a peripheral species known from Carbon County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The two occurrences in the state have similar associated vegetation, but occur on different landforms.

5. ***Trend:***

   Plants could not be found at one site in 1993, two years after it was discovered, but this was attributed to drought. Analysis of population trends in annual species is confounded by potential for dormancy in unfavorable years.

6. ***Threats:***

   Its habitat may be impacted by livestock grazing, but effects on the species are unknown.

7. ***Protection:***

   Both known occurrences are on public lands with sensitive species policies in place, but this may not insure their long term viability.

Needs:

8. ***Inventory:***

   Survey in the course of area project planning.

9. ***Protection:***

   At least one in MT.

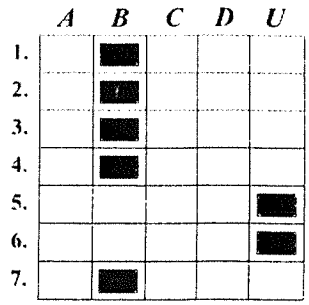
10. ***Management:***

    Evaluate grazing response.

Other Considerations:

CAREX CRAWEI

Craw's Sedge



STATE STATUS SUMMARY

State Rank: **S1**

7 EOs; possibly threatened by grazing

Rarity:

1. *Number of Occurrences:*

There are 7 occurrences. One is a possibly nonviable population in a roadside ditch.

2. *Abundance:*

Total individuals observed is estimated greater than 10,000, but number of genets may be considerably less due to spread by rhizomes. Total known occupied habitat is less than 400 acres.

3. *Range in Montana:*

It is a peripheral species known from Cascade, Pondera, Powell, Prairie, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species habitat includes an assortment of wetland features but is likely confined to calcareous substrates. These features are scattered and local in a predominantly arid landscape.

5. *Trend:*

No data on trends are available.

6. *Threats:*

Habitat of some occurrences may be subject to grazing by livestock, but response of species is unknown. Any alterations to groundwater stability pose potential threats.

7. *Protection:*

One occurrence is at Pine Butte Swamp Nature Preserve, and two occurrences are on public lands with sensitive species policies in place but this may not insure their long-term viability. The largest known occurrence in on private land.

Needs:

8. *Inventory:*

Highly localized but very incompletely surveyed throughout range, with exception of Blackfoot Reservation study areas.

9. *Protection:*

At least one in foothills and one in plains.

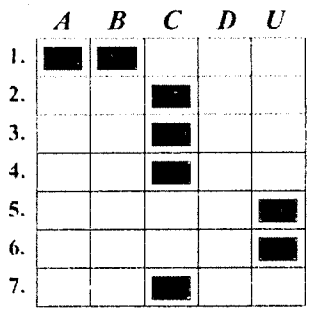
10. *Management:*

Maintain hydrology and avoid trampling.

Other Considerations:

CAREX EBURNEA

Ivory Sedge



STATE STATUS SUMMARY

State Rank:

Unresolved as vulnerable. Collected from a wide range of wooded habitats in DAWS, FERG, FLAT, RICH.

Rarity:

1. ***Number of Occurrences:***

   There are at least 4 occurrences. More are predicted based on the species' broad geographic range and ecological amplitude, and its inconspicuous nature.

2. ***Abundance:***

   It is locally common at all known sites.

3. ***Range in Montana:***

   It is a peripheral species known from Dawson, Fergus, Flathead, and Richland counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species of relatively broad ecological amplitude, occurring in two contrasting habitats and ecoregions, in wet coniferous forest west of the divide and in deciduous woodlands east of the divide, and also extending into adjacent open habitats.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   Threats are unknown.

7. ***Protection:***

   One occurrence is partly on public lands and the others are on private lands, but the species is not deemed in need of protection.

Needs:

8. ***Inventory:***

   Include among woodland targets in eastern survey projects.

9. ***Protection:***

   None identified.

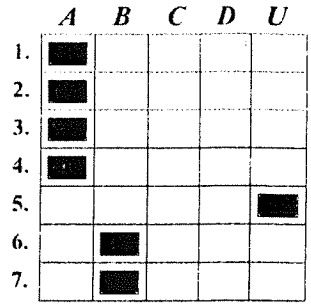
10. ***Management:***

    To be determined.

Other Considerations:

CAREX GRAVIDA VAR GRAVIDA

Pregnant Sedge



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs; habitat potentially threatened by grazing, logging

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences.

2. *Abundance:*

Total individuals observed may be less than 100. Total known occupied habitat is about 13 acres.

3. *Range in Montana:*

It is a peripheral species known from Bighorn, Powder River, and Rosebud counties. Its range constitutes a small portion of the total area of the three counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is confined to isolated patches of mesic habitat in an arid environment, and may be further restricted by historical grazing impacts.

5. *Trend:*

One occurrence known from 1955 was relocated in 1995. Small populations may remain viable due to long-lived perennial habit of species. Widespread historical impacts to woody draw habitat by grazing may be evidence of species decline.

6. *Threats:*

The species is potentially threatened by logging, livestock grazing, and encroachment of its habitat by exotic weeds.

7. *Protection:*

Two occurrences are on public lands and sensitive species policies are not in place.

Needs:

8. *Inventory:*

Flathead Valley survey is needed, and continued survey in Custer NF with project clearances. survey.

9. *Protection:*

1 eastern and 1 western, if viable.

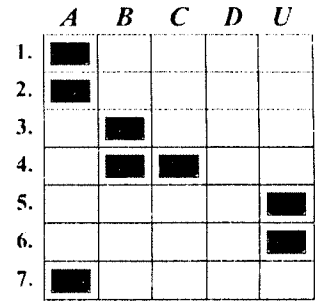
10. *Management:*

Grazing and logging effects are based on inference, warranting closer examination.

Other Considerations:

CAREX MULTICOSTATA

Many-ribbed Sedge



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs; threats and trends unknown

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences and 3 are based on pre-1960 collections. Additional occurrences are likely due to the difficulty of identifying of this species.

2. *Abundance:*

No information on population size is available, but the species was described as "occasional" at one site. It is presumed scarce based on lack of observations.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Gallatin, and Park counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Little information on habitat is available. The species occurs in subalpine and alpine grasslands, habitats which may be moderately abundant in several mountain ranges in southwest Montana.

5. *Trend:*

No information on trends are available. One occurrence may have been impacted by road construction (1989).

6. *Threats:*

Habitat at some sites is subject to livestock grazing, but response of species is unknown. Its occurrence in overgrazed habitat in other states may indicate resistance to grazing.

7. *Protection:*

Three or more occurrences are on public lands, but sensitive species policies are not in place.

Needs:

8. *Inventory:*

Survey in Centennial Mountains and elsewhere in Greater Yellowstone area.

9. *Protection:*

To be determined.

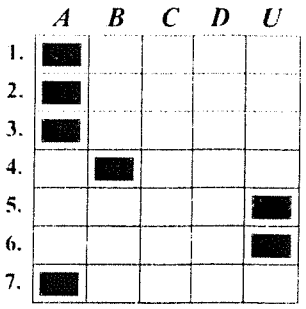
10. *Management:*

Pallatable; reported to persist or fluorish under grazing elsewhere in its range.

Other Considerations:

CAREX OCCIDENTALIS

Western Sedge



STATE STATUS SUMMARY

State Rank: **SH**

1 EO based on 1930 specimen

Rarity:

1. ***Number of Occurrences:***

There is 1 occurrence, based on a 1930 collection.

2. ***Abundance:***

The species was described as common and uncommon across different parts of its habitat.

3. ***Range in Montana:***

It is a peripheral species known from Beaverhead County. It is unclear which part of the county the collection is from.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

The species was described as common on slope habitat and uncommon on level habitat, possibly indicating intermediate habitat fidelity or alternately reflecting grazing differential.

5. ***Trend:***

The occurrence has not been relocated.

6. ***Threats:***

Habitat of the occurrence, along a creek one mile upstream from a ranch, is likely to be primary range; but response of species to grazing is unknown.

7. ***Protection:***

Land ownership of the occurrence is unknown.

Needs:

8. ***Inventory:***

Include as survey target in montane baseline studies of Beaverhead Co.

9. ***Protection:***

To be determined.

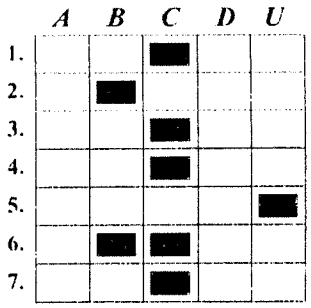
10. ***Management:***

To be determined.

Other Considerations:

CAREX TORREYI

Torrey's Sedge



STATE STATUS SUMMARY

State Rank: **S3**

Unresolved as vulnerable. 21 EOs; recurrent in wooded ravines of se. MT and a decreaser under grazing.

Rarity:

1. *Number of Occurrences:*

There are at least 21 occurrences.

2. *Abundance:*

There is an estimated total of 2,000-3,000 individuals. Known occupied habitat is less than 100 acres.

3. *Range in Montana:*

It is a peripheral species known from Big Horn, Carter, Choteau, Powder River, and Rosebud counties. The Chouteau County occurrence is based on a specimen collected over 100 years ago.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has moderate ecological amplitude. It is adapted to both coniferous and deciduous woodlands, and extends into ecotones and open habitats.

5. *Trend:*

Information on trends is not available.

6. *Threats:*

Some habitat is potentially impacted by livestock, but the species status as an increaser or decreaser has not been established. The species is a poor competitor and is potentially threatened by aggressive exotic weeds.

7. *Protection:*

Most occurrences are on public lands, and the species is not deemed in need of protection.

Needs:

8. *Inventory:*

Add to survey targets in southeastern pinelands.

9. *Protection:*

None identified.

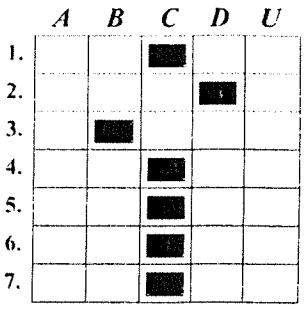
10. *Management:*

Decreases under grazing.

Other Considerations:

CASTILLEJA PILOSA VAR LONGISPICA

Parrot-head Indian Paintbrush



STATE STATUS SUMMARY

State Rank: **S3**

Limited distribution. Over 21 EOs with large numbers and spanning large area.

Rarity:

1. *Number of Occurrences:*

There are 21 documented occurrences and more are predicted based on unsurveyed potential habitat.

2. *Abundance:*

There is an estimated total of 50,00-350,000 individuals in known populations. Known occupied habitat is over 2,000 acres.

3. *Range in Montana:*

It is a peripheral species known from Carbon, Gallatin, Madison, and Park counties. A poor condition collection from Ravalli County is probably misidentified.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with high habitat fidelity to a single extensive sagebrush-grassland community type.

5. *Trend:*

The species is considered stable or increasing due to historical and current livestock grazing and fire suppression.

6. *Threats:*

The species is not threatened by current land uses on public lands. Habitat may be vulnerable to invasion by exotic weeds, but the species competitive ability in these circumstances is unknown. Subdivision and residential development potentially threaten occurrences on private lands.

7. *Protection:*

Most occurrences are on public lands and the species is not deemed in need of special protection.

Needs:

8. *Inventory:*

None identified.

9. *Protection:*

None identified.

10. *Management:*

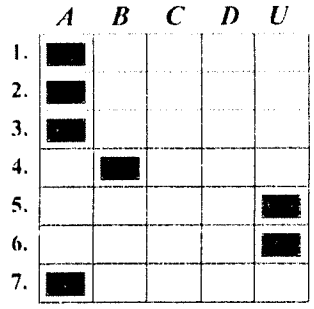
None identified.

Other Considerations:

Specimens were not collected from nearly half of the total occurrences, representing all Gallatin County sites.

CEANOTHUS HERBACEUS VAR PUBESCENS

New Jersey Tea



STATE STATUS SUMMARY

State Rank: **SH**

1 EO based on 1948 collection.

Rarity:

1. *Number of Occurrences:*

There is one occurrence, based on a 1948 specimen.

2. *Abundance:*

The specimen label indicates there were only a few plants.

3. *Range in Montana:*

It is a peripheral species known from Powder River County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Habitat as described on the specimen label (grassy, pine covered hill) is relatively common in the vicinity of the occurrence.

5. *Trend:*

The species has not been relocated by surveys in the vicinity of the collection and may be extirpated. It has declined elsewhere on the Great Plains.

6. *Threats:*

Threats to the species are unknown. Elsewhere it may be threatened by competition, especially from other shrubs and trees.

7. *Protection:*

Exact location and land ownership of the occurrence are unknown.

Needs:

8. *Inventory:*

Survey in sw. Powder River Co.

9. *Protection:*

To be determined.

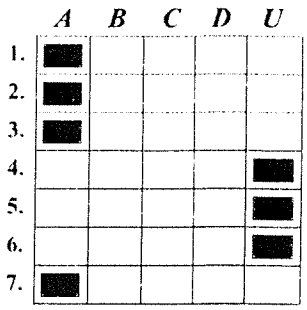
10. *Management:*

Unknown; this species has diminished elsewhere on the Great Plains (Ode, pers. commun.)

Other Considerations:

CELASTRUS SCANDENS

Bittersweet



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; habitat potentially threatened by clearing and grazing

Rarity:

1. ***Number of Occurrences:***

There is 1 occurrence based on 1975 collection with imprecise location data; and reports from Carter and Custer cos. for which there are no known vouchers.

2. ***Abundance:***

No data on population numbers or extent are available.

3. ***Range in Montana:***

It is a peripheral species known from Dawson County in the Glendive area.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

Nothing is known about habitat of the species in the state.

5. ***Trend:***

No data on trends are available.

6. ***Threats:***

Species' woodland habitat potentially threatened by grazing and clearing.

7. ***Protection:***

The occurrence is believed to be on private land.

Needs:

8. ***Inventory:***

Survey in conjunction with woody draw and riparian work in easternmost counties.

9. ***Protection:***

1 occurrence.

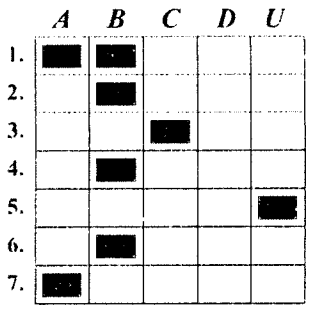
10. ***Management:***

Maintain canopy; determine effects of grazing and browsing.

Other Considerations:

CENTUNCULUS MINIMUS

Chaffweed



STATE STATUS SUMMARY

State Rank: **S2**

10 EOs including 3 historic; habitat potentially affected by grazing and changes to river flow regimes.

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences, but 3 are historical, based on collections from the late 1800's and early 1900's.

2. *Abundance:*

Four recently surveyed occurrences each had greater than 100 plants, two had numbers in at least the 1,000's and the species was described as fairly common along a 20 mile stretch of river floodplain. No data on abundance is available for historical occurrences.

3. *Range in Montana:*

It is a cosmopolitan species known from Cascade, Lake, Missoula, Ravalli, Sheridan and Valley counties. Occurrences along the Bitterroot River in Missoula and Ravalli counties and in ne. MT have been recently observed.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Recent surveys of occurrences along the Bitterroot River indicate habitat which is uniform and spotty in the floodplain setting, but far ranging historical records which lack habitat data none-the-less suggest a broader ecological amplitude in the state.

5. *Trend:*

Long term trends are unknown. It is an annual species and populations are likely to be prone to fluctuations in numbers and occupied area.

6. *Threats:*

It occupies ephemeral wetlands and wetland tension zones, potentially altered by grazing and land use changes to hydrology.

7. *Protection:*

Parts of two occurrences are on public lands, but sensitive species policies are not in place, and a third is on TNC nature preserve.

Needs:

8. *Inventory:*

Inventory is needed throughout the range. This small species is easy to overlook.

9. *Protection:*

1 eastern occurrence as on Comertown Prairie Preserve, and 1 western occurrence.

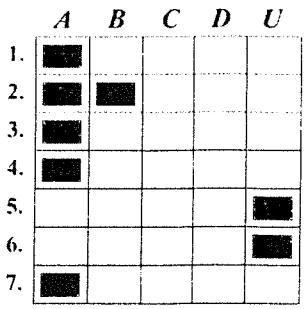
10. *Management:*

Susceptible to competition, and impacted by too little or too much vegetation removal and trampling.

Other Considerations:

CERCOCARPUS MONTANUS VAR GLABER

Birchleaf Mountain-mahogany



STATE STATUS SUMMARY

State Rank: **S1**

1 EO

Rarity:

1. ***Number of Occurrences:***

   There is one occurrence.

2. ***Abundance:***

   The species was described as abundant (1969), but data on population numbers and extent are unavailable.

3. ***Range in Montana:***

   It is a peripheral species known from Treasure County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   Detailed information on habitat is unavailable, but the species occurrence at just one site may reflect a narrow ecological amplitude.

5. ***Trend:***

   No data on trends are available.

6. ***Threats:***

   The occurrence is on a ranch and is potentially threatened by associated management activities.

7. ***Protection:***

   The occurrence is on private land.

Needs:

8. ***Inventory:***

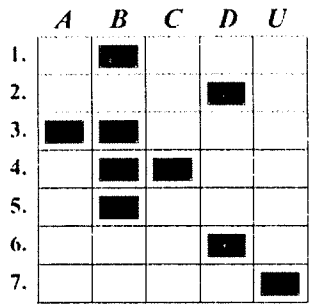
9. ***Protection:***

10. ***Management:***

Other Considerations:

CHRYSOTHAMNUS LINIFOLIUS

Lineleaf Rabbitbrush



STATE STATUS SUMMARY

State Rank: **S3**

Unresolved as vulnerable. Locally abundant and lacking threats.

Rarity:

1. *Number of Occurrences:*

There are several recently surveyed (1994) occurrences, one historical occurrence, and additional reports in literature.

2. *Abundance:*

There is an estimated total of over 100,000 individuals. The species is dominant or codominant in an area of Pryor Mts.

3. *Range in Montana:*

It is a peripheral species known from Carbon and Yellowstone Counties. It is reported from Custer County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with moderate ecological amplitude, indicated by its dominance in floodplain habitat and occurrence in other settings including disturbed habitat along roads.

5. *Trend:*

The historical occurrence in Yellowstone County could not be relocated in 1994 and vegetation in the vicinity is highly disturbed or converted, indicating probable decline or extirpation.

6. *Threats:*

The species is dominant in some areas under current land uses, and faces no known imminent threats.

7. *Protection:*

The large occurrence is on public lands.

Needs:

8. *Inventory:*

Continue compiling records.

9. *Protection:*

None identified.

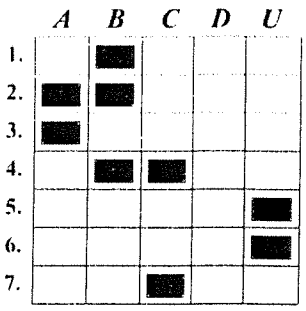
10. *Management:*

None identified. Revisit in the future.

Other Considerations:

CLEOME LUTEA

Yellow Bee Plant



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs; subject to fluctuations as an annual including years with no plants found

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Rarity:

1. *Number of Occurrences:*

There are 6 occurrences.

2. *Abundance:*

There is one large population with greater than 1,000 estimated individuals occupying about 10 acres, but 3 other occurrences with data had fewer than 50 plants occupying about an acre each.

3. *Range in Montana:*

It is a peripheral species, known from Big Horn and Carbon Counties, confined to a very small area in the Pryor Mountain-Bighorn Canyon area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a range of disturbance prone habitats (roadsides, breaklands, primary range) with a variety of soil types. Its small range in the state may reflect low climatic amplitude.

5. *Trend:*

Decline of flowering individuals noted by successive surveys in 1990's may not reflect long term trends. The species is an annual and its populations may undergo dramatic short term fluctuations and shifts in occupied area.

6. *Threats:*

Habitat is potentially impacted by livestock grazing, but the species may be favored by some level of disturbance.

7. *Protection:*

Most populations, including the largest known occurrence, are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

None identified.

9. *Protection:*

At least 1 occurrence.

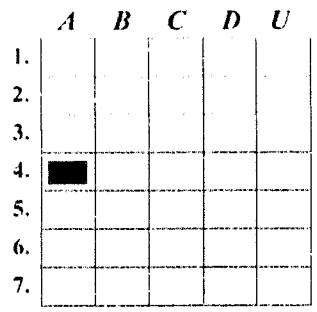
10. *Management:*

Document on-site response to livestock grazing practices.

Other Considerations:

CONIOSELINUM SCOPULORUM

Hemlock Parsley



STATE STATUS SUMMARY

State Rank: **SRF**

False report for Montana based on misidentified specimen.

Rarity:

1. *Number of Occurrences:*

There are no EOs. A 1954 specimen from Bighorn Canyon identified to this species was annotated by Hartman to a species in another genus.

2. *Abundance:*

3. *Range in Montana:*

Not known from Montana.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Moist, riparian habitat of the occurrence in an area with a unique climate probably indicates the species has narrow ecological amplitude.

5. *Trend:*

Not applicable.

6. *Threats:*

Not applicable.

7. *Protection:*

Not applicable.

Needs:

8. *Inventory:*

NA

9. *Protection:*

NA

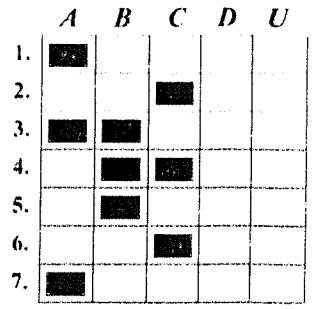
10. *Management:*

NA

Other Considerations:

CRYPTANTHA FENDLERI

Fendler Cat's-eye



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs; restricted to the largest sandhills in MT.

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences in two limited areas.

2. *Abundance:*

There are over 100,000 total estimated individuals in the 2 main populations and the third is a historic record. Total occupied habitat has not been determined but is likely to be a relatively small area due to habitat constraints.

3. *Range in Montana:*

It is known from Beaverhead and Sheridan Counties. The species range is limited to two localized sandhill complexes which lie at two far corners of the state.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is restricted to early successional settings in localized sandhills habitat, including meager areas of loose sand and degraded range.

5. *Trend:*

Populations of annuals are often prone to year-to-year fluctuations in numbes. It is more common in early seral than late seral stages of the Centennial Sandhills and the Medicine Lake Sandhills; early succession vegetation is more common at the latter but late seral is more common at the former. Habitat was lost in the Medicine Lake Sandhills with widespread planting of crested wheatgrass but fostered by grazing. The one historic occurrence is believed to represent a small adventive occurrence in the same township as the Medicine Lake sandhills population that was lost with road construction.

6. *Threats:*

The habitat may be impacted by heavy grazing and aerial herbicide application. It persists in degraded range with heavy invasion of OPUNTIA FRAGILIS. It may also decline in the absence of disturbance; it favors early/mid-sucessional stages.

7. *Protection:*

All occurrences are on private lands and on public lands without sensitive species policies in place.

Needs:

8. *Inventory:*

There is potential habitat in Roosevelt Co.

9. *Protection:*

At least part of the 2 EOs in opposite corners of MT.

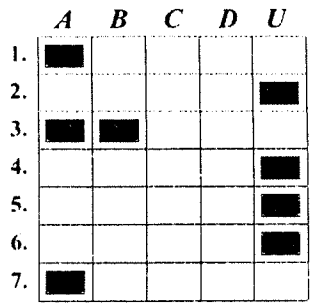
10. *Management:*

Leafy spurge control is needed in Medicine Lake. Requires early succession habitat; see Lesica and Cooper (1998) for a discussion of conceptual management model involving fire and grazing.

Other Considerations:

CRYPTANTHA HUMILIS

Cryptantha



STATE STATUS SUMMARY

State Rank: **SH**

3 EOs; known only from historic records.

Rarity:

1. ***Number of Occurrences:***

   Known from 3 records.

2. ***Abundance:***

3. ***Range in Montana:***

   It is reported from Beaverhead and Park Counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   Habitat was described as "plains and hills", possibly indicating a moderate to broad ecological amplitude.

5. ***Trend:***

   There is no information concerning trends.

6. ***Threats:***

   Threats are unknown.

7. ***Protection:***

   It occupies valley and possibly foothills settings; generally unprotected.

Needs:

8. ***Inventory:***

   Survey is needed in the Beaverhead Range and foothills near upper Yellowstone R.

9. ***Protection:***

   To be determined.

10. ***Management:***

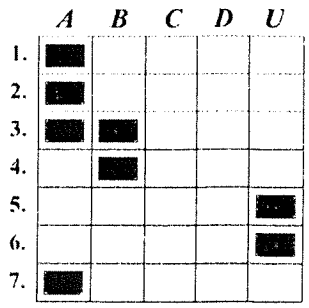
    To be deterined.

Other Considerations:

It is distinguished from other common similar species by characters of the mature fruits and it may be easily overlooked by cursory surveys.

CYPERUS ACUMINATUS

Short-pointed Flatsedge



STATE STATUS SUMMARY

State Rank: **SH**

- 2 historic EOs; possibly threatened by alteration of river flow regimes or riparian habitat

Rarity:

1. *Number of Occurrences:*

There are 2 occurrences. One is based on an 1891 collection with imprecise location data.

2. *Abundance:*

No information on abundance is available. It is presumed scarce based on lack of observations.

3. *Range in Montana:*

It is known from Cascade and Sanders Counties, with widely disjunct occurrences on both sides of the Continental Divide. Outside the state it occurs sparsely to the west, and more commonly to the east.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is found in riverine habitat west of the Continental Divide, and location of "Great Falls" is consistent with riverine habitat east of the divide. Detailed information on habitat is not available.

5. *Trend:*

No data on trends are available.

6. *Threats:*

The species is potentially threatened by riverfront development and management of water levels, but imminent threats are unknown.

7. *Protection:*

One occurrence is on private land, and the precise location and land ownership of the other is unknown.

Needs:

8. *Inventory:*

Survey needed throughout range.

9. *Protection:*

To be determined.

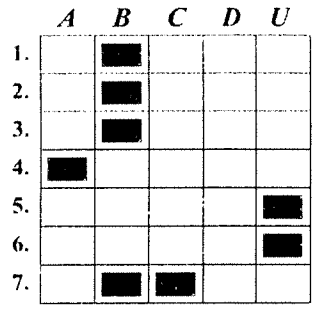
10. *Management:*

To be determined.

Other Considerations:

CYPERUS SCHWEINITZII

Schweinitz' Flatsedge



STATE STATUS SUMMARY

State Rank: **S2**

8 EOs; generally small population size; potentially threatened by grazing

Rarity:

1. *Number of Occurrences:*

There are 8 occurrences.

2. *Abundance:*

Total individuals are estimated in the thousands, but only 2 sites have greater than 200. One occurrence extends across multiple sections, but others are confined to areas of 20 acres or less.

3. *Range in Montana:*

It is known from Carter, Cascade, Custer, Powder River, and Sheridan counties. Occurrences are highly localized and widely disjunct.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species appears to be restricted to a narrow range of middle-successional microsites in localized sandy habitats.

5. *Trend:*

No data are available on trends.

6. *Threats:*

Habitat of some occurrences is grazed by livestock, but effects on the species are unknown. The species may be threatened by encroachment of other vegetation resulting from wildfire suppression.

7. *Protection:*

Two occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability. Habitat may be protected on other public and private lands.

Needs:

8. *Inventory:*

Add as survey target on reworked sand. Potential habitat is in Roosevelt Co.

9. *Protection:*

At least 1 occurrence in ne. MT and 1 in se. MT.

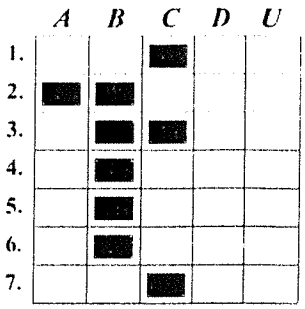
10. *Management:*

The habitat may be impacted by grazing, but the species is favored by some level of disturbance and may decline in the absence of disturbance.

Other Considerations:

CYPRIPEDIUM PARVIFLORUM

Small Yellow Lady's-slipper



STATE STATUS SUMMARY

State Rank: **S3**

54 post-1950 EOs; often small populations and potentially threatened by many land management practices plus collecting

Rarity:

1. ***Number of Occurrences:***

There are 65 occurrences, but 11 are historical, based on pre-1950 collections.

2. ***Abundance:***

Total individuals observed is estimated greater than 5,000, but number of genets is probably less due to clonal reproduction. Total occupied habitat may be less than 500 acres.

3. ***Range in Montana:***

It is a peripheral boreal species known from Flathead, Gallatin, Granite, Judith Basin, Lake, Lewis and Clark, Lincoln, Missoula, Park, Stillwater, Sweet Grass, and Teton counties. Its occurrence in several counties in the south and east of this range is based on historical collections.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

Across the state the species is known from a variety of often ecotonal habitats, but these are usually highly localized features with specialized geology and hydrology.

5. ***Trend:***

Lack of recent observations of this conspicuous species in parts of its range is thought to be evidence of local extinction. Population declines due to road construction have been documented at two other occurrences. The species has undergone nationwide decline due to flower picking and harvest of rhizomes for medicine.

6. ***Threats:***

The species is potentially threatened by grazing, logging, road construction, flower picking, and commercial rhizome harvest.

7. ***Protection:***

Many occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

Survey is needed throughout the southern end of range to relocate historic occurrence.

9. ***Protection:***

At least 2 occurrences, east and west of Divide.

10. ***Management:***

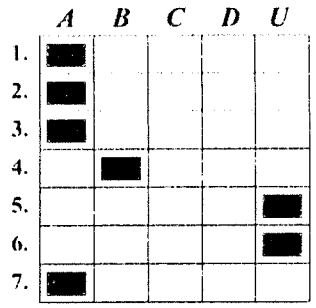
Adversely affected by grazing, logging, road construction, and water developments. Commercial collecting is regulated on public land.

Other Considerations:

Taxonomy of the species is currently in flux. There is likely to be more than one variety in the state.

DALEA ENNEANDRA

Nine-anther Dalea



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs; all on private land

Rarity:

1. ***Number of Occurrences:***

   There are 3 occurrences.

2. ***Abundance:***

   No information on abundance is available.

3. ***Range in Montana:***

   It is a peripheral species known from Custer and Richland Counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   Although little else is known about the habitats of the occurrences, they all have gravelly or rocky substrate.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   Its habitat may be vulnerable to invasions of exotic weeds.

7. ***Protection:***

   All known occurrences are on private lands.

Needs:

8. ***Inventory:***

   Survey is needed throughout species' range.

9. ***Protection:***

   At least 1 occurrence.

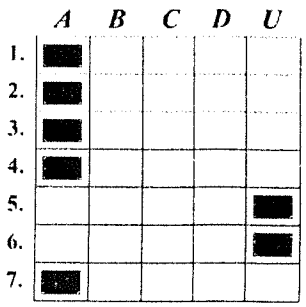
10. ***Management:***

    The species is a poor competitor. Determine management needs.

Other Considerations:

DALEA VILLOSA VAR VILLOSA

Silky Prairie Clover



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs; in low numbers and possibly losing habitat to succession

---

Rarity:

1. ***Number of Occurrences:***

   There are 4 occurrences.

2. ***Abundance:***

   Total individuals observed is estimated in the low hundreds. Known occupied habitat is a couple of acres.

3. ***Range in Montana:***

   It is a peripheral species known from Carter and Sheridan cos.; also reported from Richland Co. in Lesica and Shelly (1984) - no known source.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The species is restricted to early successional microsites of sandy habitat associated with scattered, highly localized outcrop features.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   The species requires early succession habitat. Its response to livestock grazing is unknown.

7. ***Protection:***

   One occurrence is on public land, but sensitive species policies are not in place.

Needs:

8. ***Inventory:***

   Add to targets in projects and counties adjoining known occurrences.

9. ***Protection:***

   At least Medicine Rock SP occurrence.

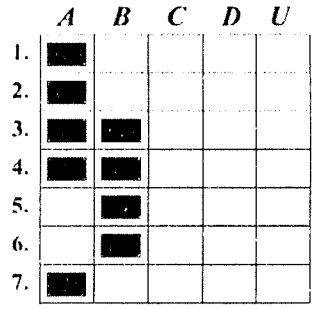
10. ***Management:***

    Control knapweed and evaluate potential for maintaining early seral habitat.

Other Considerations:

DICHANTHELIUM OLIGOSANTHES VAR SCRIBNERIANUM

Scribner's Panic Grass



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including 1 historic; recent EOs have small populations; potentially impacted by many land use practices

Rarity:

1. ***Number of Occurrences:***

There are 5 occurrences, but 3 are based on specimens collected in the 1950's and 1960's.

2. ***Abundance:***

Only 10 total individuals were found in 2 recently surveyed populations. No data on abundance are available for other occurrences.

3. ***Range in Montana:***

It is a peripheral species known from Lake and Powder River Counties. The occurrences are in two clusters on opposite sides of the state.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

The species is restricted to ponderosa pine woodlands with sandy soils, a habitat category which is widely distributed and moderately abundant, but it may also require low competition and low grazing conditions.

5. ***Trend:***

The species' characterization as a decreaser under grazing probably indicates historical decline.

6. ***Threats:***

The species is potentially threatened by livestock grazing.

7. ***Protection:***

Two occurrences are on public land, but sensitive species policies are not in place within the administrating agency (USFS).

Needs:

8. ***Inventory:***

Inventory in Flathead Valley.

9. ***Protection:***

1 eastern and 1 western occurrence.

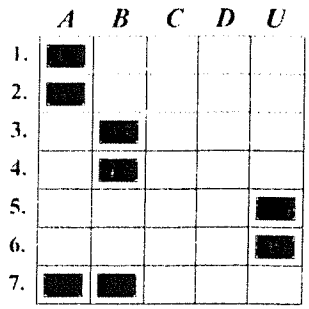
10. ***Management:***

Avoid early-summer grazing.

Other Considerations:

DOWNINGIA LAETA

Great Basin Downingia



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including 2 historic; potentially affected by grazing and water management

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Rarity:

1. *Number of Occurrences:*

There are five occurrences. Two are based on pre-1950 collections.

2. *Abundance:*

The species was described as locally common at one site and uncommon at another but no other data on abundance is available. Occurrences are often likely to be small due to habitat constraints.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Lewis and Clark, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has relatively narrow ecological amplitude. It is adapted to vernally wet features which are often small in size and widely scattered, but it occurs on both sandy and clay soils and in more than one plant community type.

5. *Trend:*

No information on trends are available.

6. *Threats:*

The species habitat is potentially vulnerable to small changes in hydrology.

7. *Protection:*

One, possibly small occurrence is on the Pine Butte Swamp Nature Preserve, but this may not insure its long-term viability. Other occurrences are on private or public land without sensitive species policies in place.

Needs:

8. *Inventory:*

Inventory is needed throughout its range.

9. *Protection:*

Tentatively, at least 1 on Rocky Mtn. Front and 1 in Centennials.

10. *Management:*

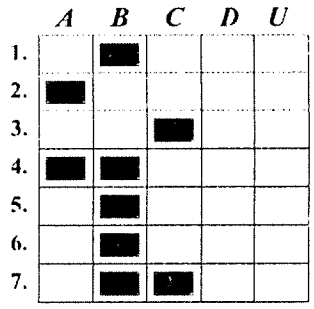
Determine whether trampling is occurring, and whether the species is subject to competition.

Other Considerations:

The species is very inconspicuous and there is high probability of additional undetected occurrences.

ELEOCHARIS ROSTELLATA

Beaked Spikerush



STATE STATUS SUMMARY

State Rank: **S2**

17 occurrences including 5 historic; often in large numbers and sometimes locally dominant, but restricted in habitat and vulnerable

Rarity:

1. *Number of Occurrences:*

There are 11 occurrences. Two are based on pre-1910 collections, but all others were discovered in the 1990's.

2. *Abundance:*

Total stems are estimated in the thousands, but number of genets is probably much less due to clonal spread. Most occurrences occupy less than an acre, and total known occupied habitat is less than 100 acres.

3. *Range in Montana:*

It is known from Carbon, Flathead, Gallatin, Lake, Lewis & Clark, Madison, Meagher, Sanders, Sweetwater, and Teton counties. It occurs in several river drainages and on both sides of the Continental Divide. It is also reported from Meagher and Park cos. (Lesica and Shelly 1991) - no known vouchers.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively narrow ecological amplitude found at rare wetland features including both hot springs and fens in both rangeland and forest landscape settings.

5. *Trend:*

The species has probably declined at some sites due to alteration of habitat by development of thermal springs and hydrological degradatin in valleybottom settings.

6. *Threats:*

Habitat is potentially threatened trampling, eutrophication, and further development of thermal springs at some sites.

7. *Protection:*

One occurrence is on the Pine Butte Swamp Nature Preserve, and five are on public lands but sensitive species policies are not in place for all.

Needs:

8. *Inventory:*

Most of the species' occurrences warrant survey as plant association occurrences.

9. *Protection:*

At least 1 in nw., sw., and sc. MT.

10. *Management:*

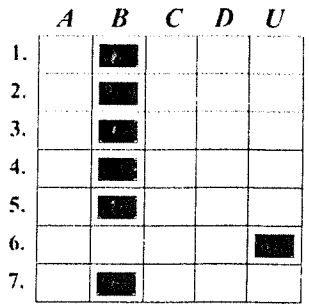
Maintain hydrology and oligotrophic conditions.

Other Considerations:

In well-developed habitat, this species is locally dominant and recognized as a distinct plant association type.

ELODEA LONGIVAGINATA

Long Sheath Waterweed



STATE STATUS SUMMARY

State Rank: **S2**

6 EOs; potentially affected by impoundments, grazing and oil drilling.

Rarity:

1. *Number of Occurrences:*

There are 6 occurrences. More are likely because the species is inconspicuous and its habitat is poorly surveyed.

2. *Abundance:*

Total individuals estimated in the thousands or more, but known occupied habitat is a very small area.

3. *Range in Montana:*

It is known from Beaverhead, Glacier, Liberty, Stillwater, and Toole counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has a somewhat narrow ecological amplitude, usually occurring in small ponds, but also along reservoir margins, in grassland settings. These features are scattered, sometimes in high densities, across the species' range.

5. *Trend:*

No information on trends is available, but decline is inferred at recently impounded sites.

6. *Threats:*

The species is potentially threatened by impoundment, eutrophication of ponds due to livestock use at some sites, and by groundwater alterations by to oil field developments.

7. *Protection:*

One occurrence is on public land with sensitive species policies in place. Others are on private or tribal lands.

Needs:

8. *Inventory:*

Add to survey targets for submerged vegetation research.

9. *Protection:*

To be determined.

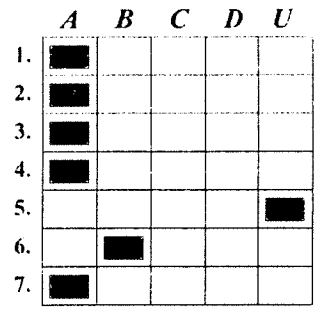
10. *Management:*

Maintain water levels and water quality.

Other Considerations:

ELYMUS FLAVESCENS

Sand Wildrye



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; potentially threatened by dune overgrazing or encroachment.

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

One occurrence was estimated to consist of fewer than 300 flowering culms in 3 subpopulations occupying about an acre of habitat. The species was described as scattered in the historic collection. Number of genets may be less due to spread by rhizomes.

3. *Range in Montana:*

It is a peripheral species known the Centennial Valley.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is confined to one localized sand dune complex and is possibly restricted to the most open microsites.

5. *Trend:*

No information is available on trends. It is an early succession species that declines under complete destabilization or stabilization.

6. *Threats:*

Some portions of habitat are subject to livestock grazing. Although response of the species to grazing is unknown, other members of the genus are highly palatable and often decrease under grazing.

7. *Protection:*

The occurrence is on private land or on public land without sensitive species policies in place, or land ownership is unknown.

Needs:

8. *Inventory:*

More detailed survey is warranted.

9. *Protection:*

1 occurrence.

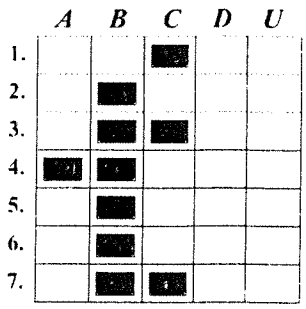
10. *Management:*

Collect information on palatability and on-site affects of grazing. Requires early succession habitat; see Lesica and Cooper (1998) for a discussion of conceptual management models involving fire and grazing.

Other Considerations:

EPIPACTIS GIGANTEA

Giant Helleborine



STATE STATUS SUMMARY

State Rank: **S2**

23 EOs including 2 historic; high habitat specificity and potentially affected by land management practices.

Rarity:

1. *Number of Occurrences:*

There are 23 occurrences.

2. *Abundance:*

Total stems are conservatively estimated greater than 20,000 but number of genets is probably much less due to clonal spread. Total known occupied habitat is less than 200 acres.

3. *Range in Montana:*

It is a peripheral species known from Carbon, Cascade, Flathead, Granite, Lake, Madison, Powell, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively narrow ecological amplitude associated with rare, often thermal, hydrological features. However, it grows on both mineral (travertine at thermal springs) and organic (peat in fens) substrates, and occurs in a range of landscape settings.

5. *Trend:*

In addition to the 23 occurrences in the BCD, there are 4 historical occurrences which are believed extirpated. Declines are also probable at other occurrences at developed thermal springs.

6. *Threats:*

Occurrences at thermal springs are potentially threatened by further development and human disturbance. Some areas of habitat are potentially threatened by invasions of exotic weeds.

7. *Protection:*

Several occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability, and they do not represent the entire geographic or ecological range of the species in the state.

Needs:

8. *Inventory:*

Add to wetlands survey targets EOs, and identify monitoring needs.

9. *Protection:*

At least 3 EOs in nw., sw, and sc. MT.

10. *Management:*

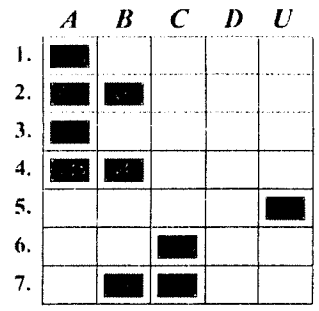
Maintain hydrology and water quality.

Other Considerations:

This is the only member of its genus in the U.S. and Canada, and is sparse throughout much of its range.

ERIGERON ASPERUGINEUS

Idaho Fleabane



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including 2 historic; few imminent threats with possible exception of Madison Co. EO

Rarity:

1. *Number of Occurrences:*

There are 5 occurrences, but one is based on a 1934 collection and its current viability and/or proper identification are doubtful.

2. *Abundance:*

The species was described as locally common to abundant at 3 sites and as rare or with limited abundance at 2.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead, Madison, and Ravalli counties. It is confined to the Bitterroot Range (including Lima Peaks), except for the single historical Madison County occurrence.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species probably has a narrow ecological amplitude, its habitat confined to the highest elevations in its range. Its occurrence in Madison County in atypical habitat (low elevation rangeland) raises doubt of proper identification.

5. *Trend:*

No information on trends is available. Its occurrence in limited abundance in overgrazed habitat in 1934 in Madison County, and lack of recent observations by plant surveys in this area may indicate local extirpation.

6. *Threats:*

Except for the Madison County occurrence, the species occurs in alpine habitat with few imminent threats.

7. *Protection:*

All four recently (1980's) surveyed occurrences are on public lands with sensitive species policies in place.

Needs:

8. *Inventory:*

Verification of the Madison Co. collection is needed to define distribution and inventory needs.

9. *Protection:*

Contingent on stewardship need.

10. *Management:*

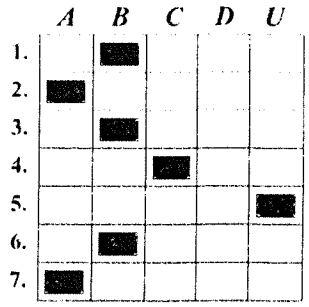
No management needs have been identified with the species in its alpine habitat.

Other Considerations:

The species may be quite difficult to distinguish from other more common species. Verification of the Madison County specimen is recommended.

ERIGERON FORMOSISSIMUS VAR VISCIDUS

Beautiful Fleabane



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs including 2 historic, from 6 mountain ranges; potentially affected by land management practices

Rarity:

1. *Number of Occurrences:*

There are 6 occurrences. Two are based on pre-1940 collections.

2. *Abundance:*

No information on abundance is available.

3. *Range in Montana:*

It is a disjunct species known from Carbon, Deer Lodge, Madison, Park and Ravalli counties. It is known from several mountain ranges.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species occurs in a few relatively abundant and widespread open forest and grassland community types and ecotones.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Habitat is potentially threatened by road building, timber harvest, and invasions of exotic weeds. The species is potentially threatened by trampling by recreationists at one site.

7. *Protection:*

Most occurrences are on public lands, but sensitive species policies are not in place.

Needs:

8. *Inventory:*

Baseline survey is needed throughout species' distribution.

9. *Protection:*

At least 1 occurrence.

10. *Management:*

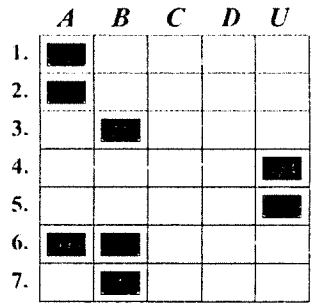
Impacted by surface-disturbing logging and road construction.

Other Considerations:

Its relatively broad distribution, with single collections from several mountain ranges, suggests the species may be more widespread than records indicate. It belongs to a large, difficult, under-collected genus.

ERIGERON LINEARIS

Linearleaf Fleabane



STATE STATUS SUMMARY

State Rank: **S1**

Limited distribution.

Rarity:

1. ***Number of Occurrences:***

   4 EOs

2. ***Abundance:***

   The only two recent records had population numbers less than 100.

3. ***Range in Montana:***

   Sporadic in southwestern Montana including Beaverhead, Lewis and Clark, and Ravalli cos.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The two recent occurrences are highly localized within common plant associations. Either the microhabitat specificity has yet to be determined, or the occurrences are adventive.

5. ***Trend:***

   None of the EOs have been revisited. The fundamental nature of the EOs is questioned because the species is highly localized within what appears as extensive suitable habitat, in locations of historically intense mining activity.

6. ***Threats:***

   Mining, grazing and exotic species invasion are potential threats at varying levels

7. ***Protection:***

   At least the two recent occurrences are on public land, but the species is not recognized on current sensitive species program.

Needs:

8. ***Inventory:***

   Baseline survey needed throughout range.

9. ***Protection:***

   To be determined.

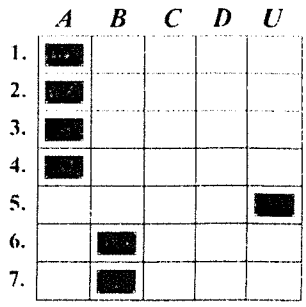
10. ***Management:***

    Leafy spurge invasion threatens 1 occurrence.

Other Considerations:

ERIOGONUM SALSUGINOSUM

Smooth Buckwheat



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs; potentially impacted by bentonite mining and exotic species invasion

Rarity:

1. ***Number of Occurrences:***

There are 2 occurrences, but additional habitat not surveyed may support additional populations.

2. ***Abundance:***

An estimated total of 1,000-2,000 individuals have been observed. Total known occupied habitat is about 3 acres.

3. ***Range in Montana:***

It is a disjunct species disjunct known from Carbon County, where it is restricted to the Pryor Mountains area. Nearest occurrences outside the state are in Utah.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a species with narrow ecological amplitude, confined to bentonite substrate and a localized climate.

5. ***Trend:***

Somewhat lower numbers reported in 1995 compared to 1994 and 1991 probably do not reflect long-term trends. The species is an annual and number of flowering plants in a population is likely to fluctuate from year to year depending on climate.

6. ***Threats:***

Habitat is potentially threatened by bentonite mining and invasions of exotic weeds.

7. ***Protection:***

Both known occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

Completion of survey is needed in the vicinity of occurrences.

9. ***Protection:***

At least 1 occurrence.

10. ***Management:***

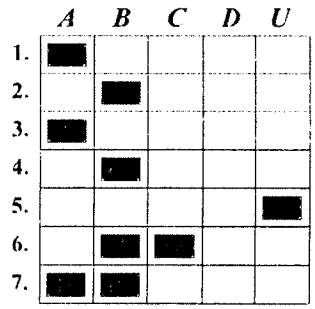
Control weed invasion and work with mine as needed to avoid habitat loss.

Other Considerations:

Recently documented addition to state flora.

EUPATORIUM MACULATUM VAR BRUNERI

Joe-pye Weed



STATE STATUS SUMMARY

State Rank: **S2**

6 EOs including 1 historic; potentially affected by water management and recreation

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Rarity:

1. *Number of Occurrences:*

There are 6 occurrences. One is based on a 1952 collection with imprecise location data.

2. *Abundance:*

Over 5,000 flowering stems have been observed. Total known occupied habitat may be over 40 acres.

3. *Range in Montana:*

It is a peripheral species known from Big Horn and Carbon Counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is restricted to groundwater discharge zones associated with streams and seeps, but may be tolerant of some surface disturbance. otherwise arid setting.

5. *Trend:*

Limited information on trends is available. Parts of populations may have been flooded by Bighorn Reservoir.

6. *Threats:*

The largest populations are relatively remote. It is potentially impacted by water management practices, recreation, and livestock grazing; less so by herbicide treatment.

7. *Protection:*

Most known occurrences are on Bighorn Canyon NRA without a sensitive species policies in place.

Needs:

8. *Inventory:*

Add to wetland survey targets in Big Horn and Carbon cos.

9. *Protection:*

Major occurrences on Bighorn Canyon NRA are relatively secure due to their remoteness.

10. *Management:*

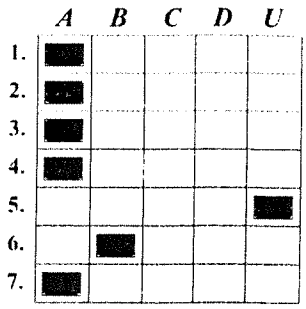
Consider tolerance to surface disturbance.

Other Considerations:

Presumed to extend onto Crow Reservation in the Bighorn Canyon, where it relatively secure.

EUSTOMA GRANDIFLORUM

Showy Prairie-gentian



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; potentially impacted by land management practices

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

Total known occupied habitat is about 1/4 acre.

3. *Range in Montana:*

It is a peripheral species known from McCone County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Known from just one site without detailed habitat information, the species is presumed to have narrow ecological amplitude. It is from a wet meadow, a habitat feature that is highly restricted in the Great Plains landscape.

5. *Trend:*

It was discovered in the state in 1994, and suspected by landowner of being a weed. There is no reason to believe that the species is adventive and increasing in the state because it is habitat-specific and palatable.

6. *Threats:*

The species is potentially threatened by farm and ranch activities including herbicide spraying, haying, cultivation, and livestock grazing. Its habitat is potentially threatened by irrigation and drainage.

7. *Protection:*

The single occurrence is on private land.

Needs:

8. *Inventory:*

Baseline survey is needed in the Big Muddy valley.

9. *Protection:*

At least 1 occurrence.

10. *Management:*

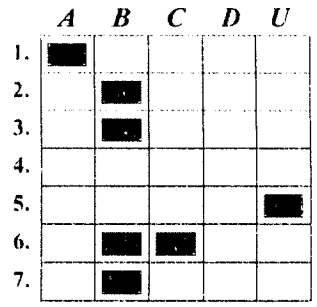
Get management information from CO.

Other Considerations:

Recently documented addition to state flora.

GENTIANOPSIS MACOUNII

Macoun's Gentian



STATE STATUS SUMMARY

State Rank: **S1**

Known from 4 records, potentially vulnerable.

Rarity:

1. ***Number of Occurrences:***

   There are 4 occurrences.

2. ***Abundance:***

   Two occurrences have population numbers in 100-1,000 range, and two occurrences have population numbers close to 100.

3. ***Range in Montana:***

   Two counties along Rocky Mountain Front.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

5. ***Trend:***

   Unknown.

6. ***Threats:***

   No immediate threats at protected sites and national forest; potentially affected by water developments and grazing.

7. ***Protection:***

   Protected on Pine Butte Preserve and presumed protected in Glacier National Park.

Needs:

8. ***Inventory:***

   Systematic survey is needed along the Rocky Mountain Front, fostering wetlands work in Blackfeet Reservation.

9. ***Protection:***

   Protection needs have been met.

10. ***Management:***

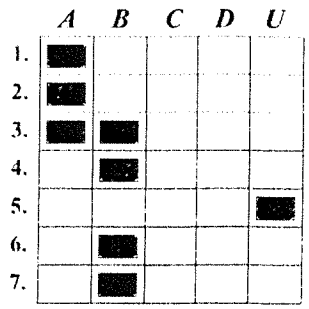
    Maintain current management without grazing or diversion.

Other Considerations:

Voucher specimen needed for Glacier National Park occurrence to confirm species identification.

GENTIANOPSIS SIMPLEX

Hiker's Gentian



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs; potentially affected by land use practices

Rarity:

1. *Number of Occurrences:*

There are 5 occurrences.

2. *Abundance:*

An estimated total of 400-500 individuals were observed in 4 populations and the species was described as uncommon at the other. Total known occupied habitat is about 5 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Carbon, and Missoula counties. Single occurrences in Carbon and Missoula Counties are widely disjunct from the cluster of 3 in the upper Big Hole River and Grasshopper Creek drainages in Beaverhead County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has relatively narrow ecological amplitude. It is restricted to palustrine habitats around seeps, streams and beaver ponds in the mountains, but has a relatively broad elevational range.

5. *Trend:*

Fewer numbers in 1991 compared to 1989 at one site may not reflect long term trends, but indicates vulnerability of these small populations to extinction. The species is an annual and may be prone to drastic year-to-year fluctuation in population size.

6. *Threats:*

The species is potentially threatened by livestock grazing at some sites. Habitat may be threatened by timber harvest.

7. *Protection:*

Three occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. *Inventory:*

Baseline survey is needed throughout its range.

9. *Protection:*

At least 1 occurrence.

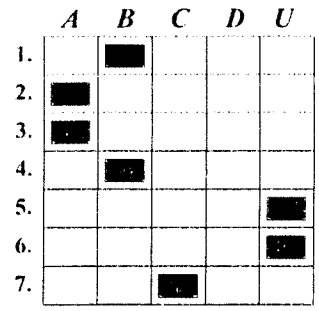
10. *Management:*

Avoid livestock use, logging to shoreline, and hydrological alteration.

Other Considerations:

GRAYIA SPINOSA

Spiny Hopsage



STATE STATUS SUMMARY

State Rank: **S2**

10 EOs including 2 historic; unknown threats

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences. Two are based on pre-1950 collections with imprecise location data.

2. *Abundance:*

Total observed individuals is estimated between 500 and 3,500. Total known occupied habitat is less than 30 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead and Carbon Counties. It is also reported from Park and Big Horn cos. (Lesica and Shelly 1991) - no known voucher.The single Beaverhead County occurrence is based on a 1888 collection. All others are confined to the Pryor Mountains area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively general habitat, usually in valleys, but it may favor sandy soils.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Habitat of some occurrences is grazed, but the species is a spiny shrub and may be resistant to direct effects of grazing.

7. *Protection:*

All but 2 occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. *Inventory:*

Baseline inventory is needed throughout documented and reported distribution.

9. *Protection:*

To be determined.

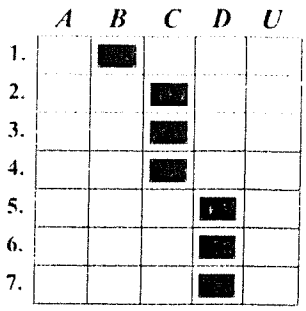
10. *Management:*

To be determined.

Other Considerations:

HALIMOLOBOS VIRGATA

Twiggy Halimolobos



STATE STATUS SUMMARY

State Rank: **SU**

Unresolved as vulnerable. Collected from sw. and nc. MT including degraded range.

Rarity:

1. ***Number of Occurrences:***

There are at least 11 known occurrences, and more are predicted based on the species' broad range and inconspicuous nature.

2. ***Abundance:***

An estimated total of greater than 3,000 individuals have been observed, and higher numbers are predicted based on abundant habitat and difficulty of survey.

3. ***Range in Montana:***

It is a peripheral species known from Beaverhead and Liberty, cos,; the Sheridan County record was based on a misidentified specimen.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a habitat generalist which is often favored by disturbance.

5. ***Trend:***

Several occurrences appear to be adventive or increasing under disturbance by livestock grazing and road construction.

6. ***Threats:***

The species does not appear to be threatened in any way.

7. ***Protection:***

Most occurrences are on public lands and the species is not considered in need of protection.

Needs:

8. ***Inventory:***

Continue compiling records.

9. ***Protection:***

None identified.

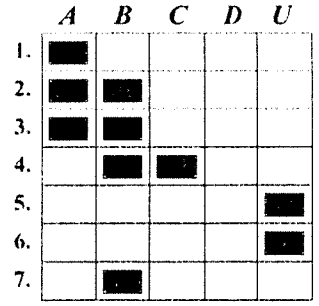
10. ***Management:***

It would be significant to document any healthy occurrences in intact habitat.

Other Considerations:

HUTCHINSIA PROCUMBENS

Hutchinsia



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs; susceptible to extirpation in consecutive unfavorable years; potentially impacted by quarrying and road maintenance

Rarity:

1. *Number of Occurrences:*

There are 2 occurrences.

2. *Abundance:*

Total individuals observed is estimated greater than 10,000, but total known occupied habitat may be less than 2 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead and Powell Counties. The two known occurrences are widely disjunct.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species exhibits relatively wide ecological amplitude in the state. One site is a warm, dry (but possibly vernally moist) scree slope while the other is a moist glaciated bottom. The sites both have alkaline or saline substrates, judging from known rock type and/or associated vegetation.

5. *Trend:*

Plants could not be relocated at one occurrence by surveys in 1989 and 1993 after its discovery in 1986, and this may or may not reflect long term trends. The species is an annual and may be prone to drastic fluctuations in population size possibly leading to extinction. However, the population may remain undetected as a dormant seed bank.

6. *Threats:*

Habitat of one occurrence is potentially threatened by gravel mining and road maintenance.

7. *Protection:*

One occurrence is on public land with sensitive species policies in place, but this may not insure its long term viability. The other is on public land without sensitive species policies in place.

Needs:

8. *Inventory:*

Baseline survey is needed throughout range.

9. *Protection:*

At least 1 occurrence.

10. *Management:*

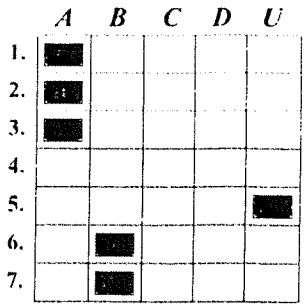
Revisit occurrence not seen since 1986 despite 2 revisits. Avoid impacts from quarrying and road construction.

Other Considerations:

Recently documented addition to state flora.

LOMATOGONIUM ROTATUM

Felwort



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs; potentially affected by grazing.

Rarity:

1. ***Number of Occurrences:***

   There are 2 occurrences.

2. ***Abundance:***

   There is an estimated total of 500-1,000 individuals. Known occupied habitat is about 10 acres.

3. ***Range in Montana:***

   It is a disjunct circumpolar species known from the sw. corner of Beaverhead County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

5. ***Trend:***

   No information on trends is available. As an annual species, its numbers may fluctuate from year to year.

6. ***Threats:***

   Habitat is potentially threatened by livestock grazing and trampling.

7. ***Protection:***

   Two occurrences are at least partly on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

   Baseline inventory is needed; targeting at least southern Beaverhead County.

9. ***Protection:***

   At least 1 in MT.

10. ***Management:***

    Eliminate trampling, and target as species priority within riparian corridor management objectives.

Other Considerations:

It is a small, annual species that flowers late in the season and is a recently documented addition to the state flora. Most surveys in its range have been conducted early in the season.

MACHAERANTHERA COMMIXTA

United Tansy-aster

	A	B	C	D	U
1.					
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STATE STATUS SUMMARY

State Rank: **SRF**

False report for Montana based on misidentified specimen

Rarity:

1. ***Number of Occurrences:***

   The species was falsely reported in the state, based on a misidentified specimen. The specimen was annotated to MACHAERANTHERA CANESCENS.

2. ***Abundance:***

3. ***Range in Montana:***

   The misidentified specimen was collected from Ruby Peak in Madison County.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

5. ***Trend:***

6. ***Threats:***

7. ***Protection:***

Needs:

8. ***Inventory:***

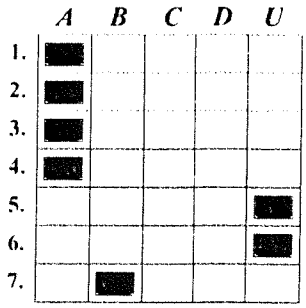
9. ***Protection:***

10. ***Management:***

Other Considerations:

MALACOTHRIX TORREYI

Desert Dandelion



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs in limited area; potentially affected by grazing

Rarity:

1. ***Number of Occurrences:***

There are 4 occurrences.

2. ***Abundance:***

Fewer than 300 individuals have been observed. Total known occupied habitat may be less than 10 acres.

3. ***Range in Montana:***

It is a peripheral species known from Carbon County, restricted to the Pryor Mtns. area. Three occurrences are in a single canyon.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a species with high habitat specificity, restricted to dry, sandy alluvium in an area with a unique climate.

5. ***Trend:***

Decline in observed numbers of flowering plants reported in mid-1990's in two populations may not reflect long term trends. The species is an annual subject to yearly population fluctuations and seeds may remain dormant in drought years.

6. ***Threats:***

Habitat may be subject to livestock grazing, but effects on species are unknown. Extremely small populations are highly vulnerable to extinction.

7. ***Protection:***

All occurrences are on BLM land with sensitive species policies in place but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

Conduct field surveys in vicinity of known occurrences as part of project clearance.

9. ***Protection:***

At least 1 in MT.

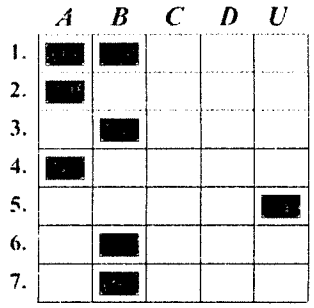
10. ***Management:***

Determine the affects of grazing.

Other Considerations:

MENTZELIA NUDA

Bractless Mentzelia



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs including 1 historic EO; potentially affected by grazing and other land management practices.

Rarity:

1. *Number of Occurrences:*

There are 6 occurrences; 4 are based on specimens collected before 1960.

2. *Abundance:*

Uncommon in microhabitat at the two recent occurrences. Elsewhere, information on abundance is available, but the species is presumed scarce based on lack of observations.

3. *Range in Montana:*

It is a peripheral species known from Custer, Dawson, Powder River and Valley counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Little is known about the habitat of this species, but it is restricted to valley bottom settings and potential habitat may be highly reduced by historical and current land uses.

5. *Trend:*

Most occurrences are reported from roadside and valley bottom habitat near cities, and paucity of recent observations may indicate decline. It occupies early succession at the two recently documented occurrences.

6. *Threats:*

The species habitat is potentially threatened by road maintenance and construction, subdivision, and livestock grazing. mowing, herbicide spray, and competition from exotic plants.

7. *Protection:*

1 of 2 recent occurrences is on BLM land with sensitive species policy in place, but this may not insure long term viability.

Needs:

8. *Inventory:*

Baseline survey is needed throughout range.

9. *Protection:*

At least 1 in MT.

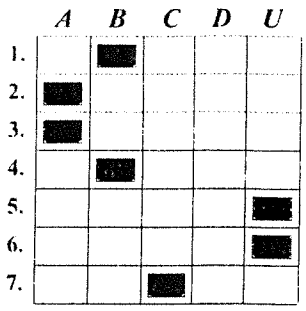
10. *Management:*

Determine affects of livestock grazing.

Other Considerations:

MENTZELIA PUMILA

Dwarf Mentzelia



STATE STATUS SUMMARY

State Rank: **S2**

15 EOs; potentially affected by livestock trailing.

Rarity:

1. ***Number of Occurrences:***

   There are 15 occurrences.

2. ***Abundance:***

   An estimated total of 700-3,600 individuals have been observed. Total known occupied habitat is less than 200 acres.

3. ***Range in Montana:***

   It is a peripheral species known from Carbon County which is restricted to the Pryor Mts./Bighorn Canyon area.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The species is restricted to specific substrates in an area with a unique climate, but occurs in a number of plant communities and landscape positions.

5. ***Trend:***

   Little information on long term trends is available. One Bighorn Canyon NRA population has persisted in low numbers despite encirclement by pavement. Populations of this biennial or short-lived perennial may fluctuate in response to climatic cycles.

6. ***Threats:***

   Habitat is potentially impacted by livestock trailing, but livestock may help disperse the species. Extremely small populations are prone to extinction.

7. ***Protection:***

   All occurrences are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. ***Inventory:***

   Conduct detailed field surveys as part of project clearance.

9. ***Protection:***

   At least 1 in MT.

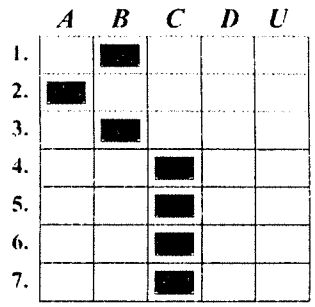
10. ***Management:***

    Seek ways to avoid livestock trailing through occurrences.

Other Considerations:

MIRABILIS HIRSUTA

Hairy Four-o'clock



STATE STATUS SUMMARY

State Rank: **S3**

Unresolved as vulnerable. Low habitat specificity and fidelity to natural conditions are inferred.

Rarity:

1. ***Number of Occurrences:***

Fewer than 10 documented occurrences, but recurrent in well-drained soils of Sheridan County, including a variety of disturbance settings.

2. ***Abundance:***

The species was described as common at one site, but as uncommon at two others. It is often sporadic in low numbers.

3. ***Range in Montana:***

It is a peripheral species known from Carter, Choteau, and Sheridan counties. The occurrences are widely separated but they are in highly localized habitats.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a species of well-drained soils, occurring sporadically or accidentally in a wide variety of such settings.

5. ***Trend:***

The species has not been relocated at Medicine Rock State Park.

6. ***Threats:***

The species shows low fidelity to natural conditions, for example found growing in crested wheatgrass, and is present under a variety of range types and conditions.

7. ***Protection:***

Two occurrences are on public lands, but sensitive species policies are not in place and their long-term viability is not insured. Precise location and land ownership of the third occurrence are unknown.

Needs:

8. ***Inventory:***

Continue to document the species as its encountered.

9. ***Protection:***

None identified.

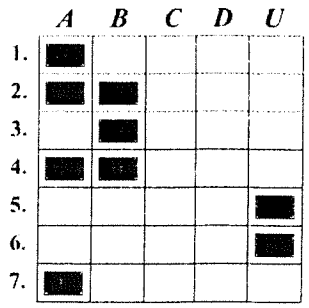
10. ***Management:***

Document any pertinent management information and responses with new records.

Other Considerations:

NAJAS GUADALUPENSIS

Guadalupe Water-nymph



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including 1 historic; potentially affected by land management practices

Rarity:

1. *Number of Occurrences:*

There are 5 occurrences. One is based on a 1891 collection.

2. *Abundance:*

The species was described as locally abundant at two occurrences and as infrequent at another.

3. *Range in Montana:*

It is a peripheral species known from Cascade, Flathead, Lake, and Ravalli counties. The Cascade County occurrence, the only one east of the Continental Divide, is historical.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively narrow ecological amplitude, which is restricted to shallow waters of ponds, sloughs, reservoir edges and streams at low elevations in the valleys.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Habitat is potentially threatened by water pollution and management of water levels.

7. *Protection:*

One occurrence is partly on public lands, but sensitive species policies are not in place and its long term viability is not insured. Other occurrences are on private lands or precise location and land ownership are unknown.

Needs:

8. *Inventory:*

Inventory as part of submerged vegetation documentation.

9. *Protection:*

At least 1 in MT.

10. *Management:*

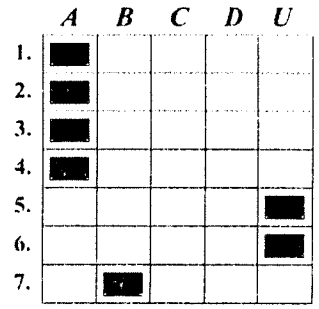
Evaluate tolerance to range of water quality conditions.

Other Considerations:

This is an inconspicuous species whose aquatic habitat, often on private lands, has not been well surveyed. It is relatively widespread and it may be more common than records indicate.

NAMA DENSUM

Nama



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; appears to be subject to drastic drops as an annual

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

An estimated total of 100-1,000 individuals have been observed. Total known occupied habitat is about an acre.

3. *Range in Montana:*

It is a peripheral species known from Carbon County in the Pryor Mtns. area.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is dnown from just one site, probably restricted to a set of narrow requirements involving sandy alluvium substrate and climate.

5. *Trend:*

No plants could be found in 1993 two years after the occurrence was discovered, but this may not indicate long term trends. The species is an annual and seeds may remain dormant in drought years.

6. *Threats:*

No information on threats is available.

7. *Protection:*

The occurrence is on public lands with sensitive species policies in place but this may not insure its long term viability.

Needs:

8. *Inventory:*

Baseline survey is needed in the Pryor Mtns. area.

9. *Protection:*

At least 1 in MT.

10. *Management:*

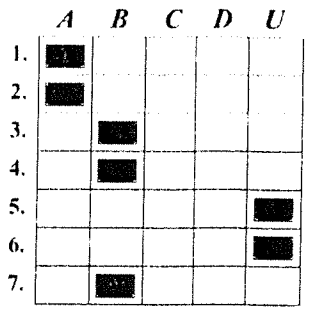
Revisit the known occurrence, considering trend and threats.

Other Considerations:

Recently documented addition to the state flora; a small species that may have been overlooked.

NUTTALLANTHUS TEXANUS

Blue Toadflax



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs; vulnerable and possibly threatened by grazing and mining

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Rarity:

1. *Number of Occurrences:*

There are 2 occurrences.

2. *Abundance:*

Greater than 100 individuals were reported at one occurrence, but surveys were incomplete.

3. *Range in Montana:*

It is a peripheral species known from Carter and Dawson counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of moderate ecological amplitude. It grows in grasslands with sandy soil and in oak woodlands on shale, a habitat which is extremely limited in extent.

5. *Trend:*

Limited efforts have been made to resurvey both occurrences, and no plants were found at either. The species is an annual and its populations may be subject to drastic year to year fluctuations in numbers of flowering individuals.

6. *Threats:*

The species habitat is subject to livestock grazing, and accompanying invasion of weedy annual species, but effects on the species are unknown. One occurrence is potentially threatened by bentonite mining.

7. *Protection:*

Both occurrences are on public lands, one with sensitive species policies in place, but this may not insure long term viability.

Needs:

8. *Inventory:*

Baseline survey is needed throughout range.

9. *Protection:*

At least 1 in MT. Potentially dovetails with Alzada Oaks protection.

10. *Management:*

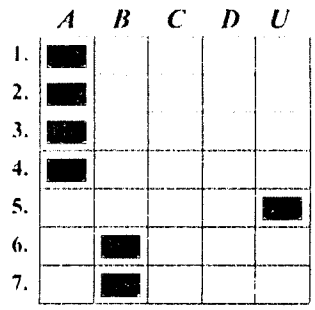
Relocate both occurrences, evaluate on-site habitat condition, and address recovery objectives and standards in planning process.

Other Considerations:

This inconspicuous and ephemeral winter annual may be more common than records indicate.

OENOTHERA PALLIDA VAR IDAHOENSIS

Pale Evening-primrose



STATE STATUS SUMMARY

State Rank: **S1**

1 EO in dune habitat potentially affected by dune degradation or succession

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

An estimated total of 550-575 individuals have been observed. Number of genets is probably less due to spread by rhizomes. Total known occupied habitat is about 10 acres.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead County. It is restricted to a very small area of localized habitat in the Centennial Valley.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of narrow ecological amplitude which is restricted to early-successional microsites in a localized sand dune habitat.

5. *Trend:*

No information on trends is available. It is an early succession species that declines under complete destabilization or stabilization.

6. *Threats:*

Habitat is prone to disturbance from off-road vehicles and livestock grazing. Species is potentially threatened by competition from other plants resulting from succession, also affected by ground squirrel population and fire.

7. *Protection:*

Part of the occurrence is on public lands with sensitive species policies in place but this may not insure its long-term viability.

Needs:

8. *Inventory:*

Detailed mapping is needed for the known EO, and to locate additional subpopulations.

9. *Protection:*

Protect only known EO to preserve species in Montana.

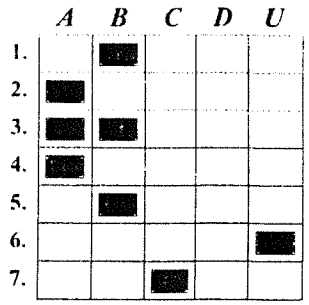
10. *Management:*

Requires early succession habitat; see Lesica and Cooper (1998) for a discussion of conceptual management models involving fire and grazing. "balance" in disturbance.

Other Considerations:

PENSTEMON ANGUSTIFOLIUS

Narrowleaf Penstemon



STATE STATUS SUMMARY

State Rank: **S2**

13 EOs including 3 historic; most are small populations; potentially affected by grazing

Rarity:

1. *Number of Occurrences:*

There are 13 occurrences. Three are based on specimens collected in 1940 or earlier.

2. *Abundance:*

In 9 recently surveyed (1994-97) occurrences there was an estimated total of fewer than 300 individuals. Total known occupied habitat may be less than 20 acres.

3. *Range in Montana:*

It is a peripheral species known from Carter, Dawson, and Missoula counties. Its occurrences outside Carter County are based on historical collections.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with narrow ecological amplitude, usually restricted to early successional microsites in very sandy habitats.

5. *Trend:*

Lack of recent observations of historical occurrences near the cities of Missoula and Glendive is taken as evidence of decline in parts of its range. Population declines have also been noted in recently surveyed occurrences, but other occurrences or subpopulations may be recently established.

6. *Threats:*

Habitat is often subject to livestock grazing and noxious weed invasion. While some level of disturbance may benefit the species' habitat, it is pallatable. Occurrences near or in cities, if extant, may be threatened by development.

7. *Protection:*

All but one of the Carter County occurrences are on public lands with sensitive species policies in place. Precise location, land ownership, and current viability of occurrences elsewhere are unknown.

Needs:

8. *Inventory:*

Baseline survey is needed in parts of southeastern MT.

9. *Protection:*

At least 1 in MT.

10. *Management:*

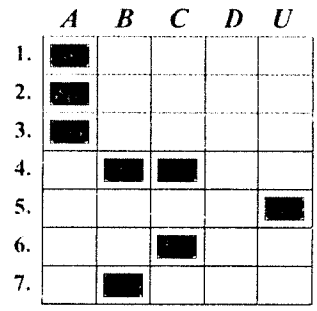
Control noxious weeds, and disperse or defer grazing until after seed set at least some years.

Other Considerations:

Verification of the Missoula specimen may be warranted.

PENSTEMON WHIPPLEANUS

Whipple's Beardtongue



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs including 1 historic; no known threats.

Rarity:

1. *Number of Occurrences:*

There are 2 occurrences. One is based on a 1946 collection.

2. *Abundance:*

There is an estimated 50-100 individuals at one site but the area was not completely surveyed. No information is available for the other.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead and Madison Counties that is found in two mountain ranges in close proximity near the boundary between the counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is restricted to high elevations in rocky settings. More information is needed on slope, aspect, and substrate; the 1 recent record was from north-facing streamcourse rubble.

5. *Trend:*

No information on trends is available.

6. *Threats:*

The species occupies high elevation, rocky habitat that faces few threats; possibly affected by grazing.

7. *Protection:*

One occurrence is in a Wilderness Area and the other is on public land with sensitive species policies in place.

Needs:

8. *Inventory:*

Baseline inventory is needed throughout its range.

9. *Protection:*

At least 1 in MT.

10. *Management:*

There are potential livestock grazing affects in the area of the historic record.

Other Considerations:

PHACELIA SCOPULINA

Dwarf Phacelia

	A	B	C	D	U
1.	■				
2.	■				
3.	■				
4.					■
5.					■
6.					■
7.	■				

STATE STATUS SUMMARY

State Rank: **SH**

Known only from 1 historic record; there has not been concerted relocation effort

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Rarity:

1. *Number of Occurrences:*

There is 1 occurrence, which is based on a 1885 collection.

2. *Abundance:*

No information on abundance is available, but it is taken to be scarce based on lack of observations.

3. *Range in Montana:*

It is a disjunct species known from Silver Bow County. It was collected from the general vicinity of Melrose which lies near the corner of Beaverhead, Madison and Silver Bow counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Habitat of the occurrence is unknown.

5. *Trend:*

The species has not been relocated. It is an annual and its populations may be prone to drastic fluctuations, possibly leading to local extinction.

6. *Threats:*

Due to lack of information on location and habitat, no inferences can be made concerning threats.

7. *Protection:*

The precise location and land ownership of the occurrence are not known.

Needs:

8. *Inventory:*

Systematic survey is needed in dry grassland habitat surrounding Melrose.

9. *Protection:*

To be determined.

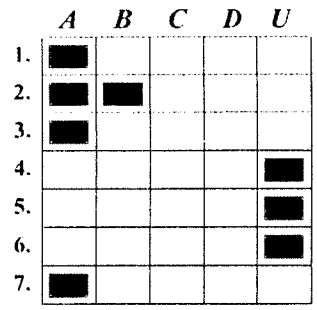
10. *Management:*

To be determined.

Other Considerations:

PHACELIA THERMALIS

Hot Spring Phacelia



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs; possibly adventive and restricted to disturbed habitats

---

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences.

2. *Abundance:*

Less than 50 plants were found at one site, but it was called a weed in patches at another.

3. *Range in Montana:*

It is a disjunct species known from Fergus, Garfield, and Phillips counties. Nearest known occurrences are over 250 air miles away in southwest Idaho.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species ecological amplitude is not well known. It may be restricted by soils or successional status, but this is not apparent from collection label data.

5. *Trend:*

No information on trends is available. It is suspected of being adventive in Montana, and if true, this would indicate historical increase. It is an annual species and populations may be prone to dramatic year to year fluctuations in numbers of flowering individuals.

6. *Threats:*

The occurrence on private land is potentially threatened by herbicide spraying and other farm and ranch activities. The York Island occurrence depends on scouring action of Fort Peck Reservoir, but recent high water levels may have impacted the species.

7. *Protection:*

Two occurrences are on public lands, but sensitive species policies are not in place. The third occurrence is on private land.

Needs:

8. *Inventory:*

Baseline inventory is needed throughout the range.

9. *Protection:*

To be determined.

10. *Management:*

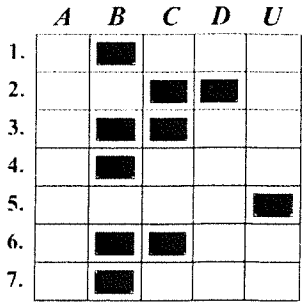
Determine whether species occurs in natural habitat, and its response to surrounding management activities.

Other Considerations:

There is inadequate information to confirm or refute its adventive nature; the only detailed habitat information is for the Fort Peck Reservior occurrence where it is sporadic along early successional shorelines and temporarily ponded areas behind the rack lines.

PHLOX ANDICOLA

Plains Phlox



STATE STATUS SUMMARY

State Rank: **S2**

10 EOs; possibly more common in Montana than records indicate.

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences from 5 eastern counties. Additional populations surveyed after the flowering period may be this species.

2. *Abundance:*

There are two occurrences with an estimated total of over 10,000 individuals occupying extensive habitat. At other sites the species is sparse to locally common, and at some surveys have been incomplete.

3. *Range in Montana:*

It is a peripheral species known from Carter, Dawson, Powder River, Rosebud, and Sheridan counties. Also reported from Wibaux Co. and from McCone Co. (Lesica & Shelly 1991) - the latter is thought to correspond with the Dawson Co. specimen collected very close to the McCone County line.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively broad ecological amplitude, occurring in a variety of sandy habitats, but it is adapted to early successional microsites or patches, depending on fire, erosion, or other disturbance to reduce competition.

5. *Trend:*

Limited information on trends is available. Plants under high grass cover have low vigor. It survives and is vigorous after summer wildfire.

6. *Threats:*

Habitat of some occurrences is subject to livestock grazing, but disturbance and reduction of competition may benefit the species at moderate levels.

7. *Protection:*

Over half of occurrences are on public land, but it does not have sensitive species status.

Needs:

8. *Inventory:*

Baseline inventory is needed throughout much of species' range.

9. *Protection:*

To be identified.

10. *Management:*

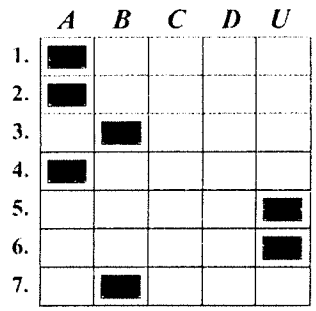
It is an early-succession species of plains and woodlands, perhaps requiring a management "balance" in disturbance. It appaers to be favored by fire in some form.

Other Considerations:

This species may have been overlooked because it flowers early in spring and resembles the widespread PHLOX HOODII.

PHYSARIA BRASSICOIDES

Double Bladderpod



STATE STATUS SUMMARY

State Rank: **S2**

8 EOs; small populations.

Rarity:

1. *Number of Occurrences:*

This species is known from 4 EOs and was first discovered in Montana in 1994.

2. *Abundance:*

The total number of plants statewide is ca. 200, with most populations less than 50.

3. *Range in Montana:*

The species is known from Carter, Petroleum and Powder River counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is restricted to a subset of small sandstone outcrops.

5. *Trend:*

There is no basis for evaluating trend.

6. *Threats:*

The species occurs on outcrop settings with limited direct threat, but is potentially affected by exotic species invasion and road maintenance.

7. *Protection:*

All occurrences are on public land, but this species is not recognized on agency lists.

Needs:

8. *Inventory:*

Baseline inventory may be needed, pending confirmation of restricted distribution in MT.

9. *Protection:*

To be determined.

10. *Management:*

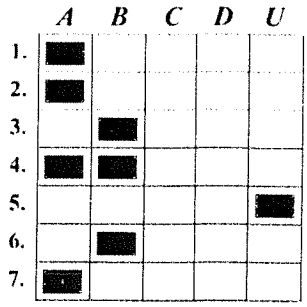
Avoid road maintenance impacts and control exotic species.

Other Considerations:

Recently documented addition to state flora. Verification of all Physaria didymocarpa specimens from eastern Montana is warranted in the event that MT material was not considered by monographers.

PLAGIOBOTHRYS LEPTOCLADUS

Slender-branched Popcorn-flower



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs including 1 historic; potentially affected by land use practices

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Rarity:

1. *Number of Occurrences:*

There are 3 occurrences. One is historical, based on a 1937 collection.

2. *Abundance:*

The historical collection label described the species as locally abundant, but one recently surveyed population had fewer than 100 plants occupying less than an acre of habitat, and no data are available for the third site.

3. *Range in Montana:*

It is a disjunct species known from Custer, Glacier, and Phillips counties. It's occurrences are widely separated.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with narrow ecological amplitude, adapted to mudflats around ephemeral ponds which are small and isolated features in a predominantly arid landscape.

5. *Trend:*

No information on trends is available. It is an annual species and populations and habitat may be prone to fluctuations in size and area responding to climatic cycles.

6. *Threats:*

Its historical occurrence, if still extant, is potentially threatened by activities associated with an agricultural research station. Pondside habitat is potentially impacted by livestock trampling, but effects on the species are unknown.

7. *Protection:*

All occurrences are on public lands, but sensitive species policies are not in place.

Needs:

8. *Inventory:*

Baseline survey is needed throughout range.

9. *Protection:*

At least 1 occurrence in MT.

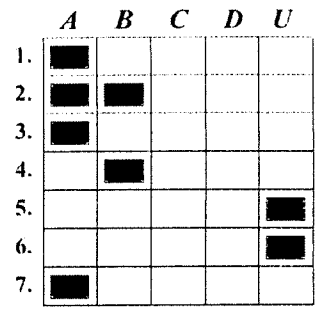
10. *Management:*

Evaluating vulnerability to trampling is key in assessing management needs and threats.

Other Considerations:

POA CURTA

Short-leaved Bluegrass



STATE STATUS SUMMARY

State Rank: **S1**

1 EO; limited information to assess status

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence.

2. *Abundance:*

The species was described as common, but no data on numbers or extent are available.

3. *Range in Montana:*

It is a peripheral species occurring in the Pryor Mountains.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species was collected from a Douglas fir forest community type, the most common forest type in the Pryor Mtns. Other habitat details of slope, aspect, and substrate are unknown.

5. *Trend:*

No information on trends is available. The species was first found in the state in 1992, and the occurrence has not been revisited.

6. *Threats:*

No information on threats is available. It is part of wild horse range, and in an area with a high incidence of disease and mortality among Douglas fir; vulnerable to crownfire.

7. *Protection:*

The occurrence is on public land, but precise location and jurisdictional agency is not known and its long term viability is not insured.

Needs:

8. *Inventory:*

Baseline inventory is needed in Pryor Mtns.

9. *Protection:*

To be determined.

10. *Management:*

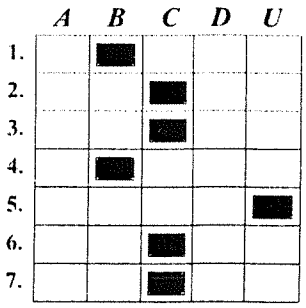
To be determined.

Other Considerations:

Recently documented addition to the state flora. The species belongs to a genus often overlooked by botanists due to difficulty of identification, and may be more common than the single record indicates.

POLYGONUM POLYGALOIDES

White-margined Knotweed



STATE STATUS SUMMARY

State Rank: **SU**

Unresolved as vulnerable. Reported in Dorn from sw MT; possibly adventive

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Rarity:

1. ***Number of Occurrences:***

   There are at least 6 known occurrences, and more are predicted based on the species broad range.

2. ***Abundance:***

   It is common or very common at at least half of the known sites.

3. ***Range in Montana:***

   It is a peripheral species known from Beaverhead, Glacier, Lewis and Clark, Powell, and Sanders counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species usually found in drying mud of small wetland features, but is also reported in atypical upland habitats such as "meadow in lodgepole pine" and "sagebrush flats."

5. ***Trend:***

   No information on trends is available. It is an annual species, and subject to fluctuation in yearly numbers.

6. ***Threats:***

   It is an annual species which may benefit from disturbance.

7. ***Protection:***

   Most occurrences are on public lands and the species may not in need of protection.

Needs:

8. ***Inventory:***

   Continue compiling collection records, considering the degree it requires native habitat and its status in such settings.

9. ***Protection:***

   To be determined.

10. ***Management:***

    Documentation of habitat, management activities and apparent responses is to be documented with new records in the field.

Other Considerations:

The species is native but may have been introduced by man or spread along roadsides at some sites.

POTENTILLA PLATTENSIS

Platte Cinquefoil

	A	B	C	D	U
1.	■				
2.	■				
3.	■	■			
4.					■
5.					■
6.					■
7.	■				

STATE STATUS SUMMARY

State Rank: **S1**

2 EOs including 1 historic; potentially affected by land management practices

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Rarity:

1. ***Number of Occurrences:***

There are 2 occurrences. They are based on specimens collected in 1968 and 1937.

2. ***Abundance:***

The species was described as moderately abundant at one site but no information on abundance is available for the other.

3. ***Range in Montana:***

It is a disjunct species known from Beaverhead and either Big Horn or Carbon Counties; in the Centennial Valley and Pryor Mtns.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

There is not enough information to assess habitat specificity or habitat abundance. It occupies wet grassland or sagebrush steppe.

5. ***Trend:***

No information on trends is available. The occurrences have not been revisited.

6. ***Threats:***

No information on threats is available. Habitat may be subject to livestock grazing, but effects on the species are unknown.

7. ***Protection:***

The occurrences are on public lands, but precise locations and jurisdictional agencies are uncertain.

Needs:

8. ***Inventory:***

Baseline survey is needed throughout range.

9. ***Protection:***

To be determined.

10. ***Management:***

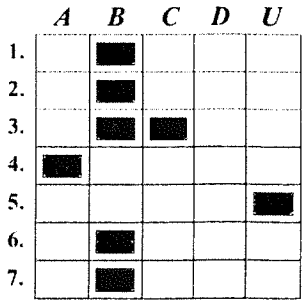
To be determined.

Other Considerations:

The species may be mistaken for a widespread and common member of the genus, POTENTILLA OVINA.

PRIMULA INCANA

Mealy Primrose



STATE STATUS SUMMARY

State Rank: **S2**

15 EOs; potentially impacted by water management practices.

Rarity:

1. *Number of Occurrences:*

There are 15 occurrences. One is based on a 1906 collection, but all others were surveyed in the 1980's or 1990's.

2. *Abundance:*

An estimated total of 2,000-3,000 individuals have been observed. Total known occupied habitat is probably less than 200 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead, Broadwater, Deerlodge, Gallatin, Jefferson, Madison, and Sheridan, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has a narrow ecological amplitude. It is restricted to groundwater fed wetlands with marly soils, and appears to have precise micro-habitat requirements as conditioned by moisture and competition regimes.

5. *Trend:*

No information on trends is available.

6. *Threats:*

The species is potentially threatened by activities which result in altered hydrology of its habitat, such as water diversion, spring development, flooding, and wetland filling. Habitat is often subject to livestock grazing but the species may tolerate this under certain conditions.

7. *Protection:*

Two Beaverhead County occurrences are on public lands with sensitive species policies in place, and one small disjunct occurrence in Teton County is in the Pine Butte Swamp Nature Preserve. Most occurrences, including the largest populations, are on private land.

Needs:

8. *Inventory:*

Survey on private lands in western Montana is incomplete.

9. *Protection:*

At least 1 large population in western Montana; possibly 1 in eastern Montana.

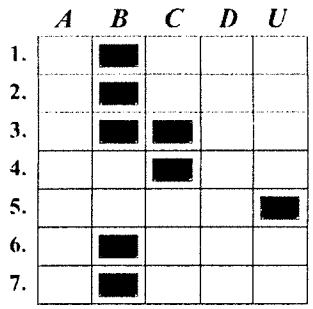
10. *Management:*

Add as species target to riparian corridor management objectives.

Other Considerations:

PSILOCARPHUS BREVISSIMUS VAR BREVISSIMUS

Dwarf Woolly-heads



STATE STATUS SUMMARY

State Rank: **S2**

7 EOs; potentially affected by grazing.

Rarity:

1. ***Number of Occurrences:***

There are 7 occurrences.

2. ***Abundance:***

It was described as common at 4 sites. Data are lacking for the other occurrences. Area occupied is likely to be very small for most occurrences due to the nature of their wetland margin habitats.

3. ***Range in Montana:***

It is a peripheral species known from Cascade, Petroleum, Phillips, and Sanders counties. Its scattered occurrences span the Continental Divide and 2/3 the length of the state.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is restricted to mudflats that are inundated early in the year, a low competition habitat associated with ephemeral pools, creeks, and rivers in a rather broad range of landscape settings.

5. ***Trend:***

No information on trends is available. It is an annual species and its populations may be prone to dramatic fluctuations in numbers of flowering plants, and may be short-lived and transient.

6. ***Threats:***

Potentially affected by trampling and changes to water table levels.

7. ***Protection:***

Three occurrences are on public lands with sensitive species policies in place, but this may not insure their long term viability.

Needs:

8. ***Inventory:***

Baseline survey is needed throughout range.

9. ***Protection:***

At least 1 in eastern and 1 in western MT.

10. ***Management:***

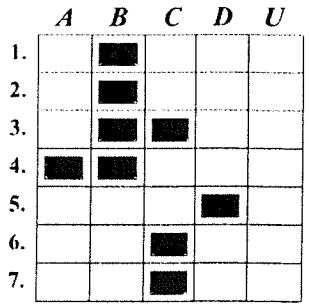
Evaluate affects of grazing.

Other Considerations:

Broad distribution and the inconspicuous nature of this annual species suggest that it may be more common than records indicate.

PSORALEA HYPOGAEA

Little Indian Breadroot



STATE STATUS SUMMARY

State Rank: **S3**

Unresolved as vulnerable. 18 EOs in widespread, localized habitat of 8 unglaciated eastern counties, with few threats.

Rarity:

1. *Number of Occurrences:*

There are 18 occurrences. One is based on a 1886 collection, but all others were surveyed in the 1980's and 1990's.

2. *Abundance:*

Total observed individuals may be less than 1000. About half of occurrences have fewer than 20 individuals each.

3. *Range in Montana:*

It is a peripheral species known from Carter, Cascade, Chouteau, Fergus, Golden Valley, Petroleum, Powder River, and Rosebud counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively narrow ecological amplitude, not restricted to dunes but with high fidelity to erosional microsites in sandy habitats which are widely scattered but comprise a small portion of the landscape across the species range.

5. *Trend:*

Presumed stable in light of low sensitivity to land use practices and unsuitability of habitat for cropland.

6. *Threats:*

Habitat of some occurrences is subject to livestock grazing but effects on the species are little or none. Coal mining is a threat in part of range. The species is tolerant of encroachment by weedy annuals.

7. *Protection:*

Several occurrences, including the largest populations, are on public lands with sensitive species policies in place but this may not insure their long term viability.

Needs:

8. *Inventory:*

Continue compiling new records.

9. *Protection:*

To be determined.

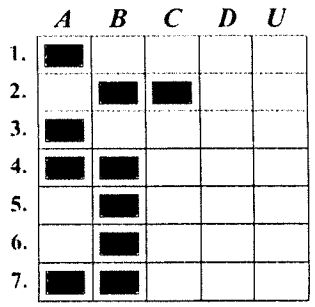
10. *Management:*

Evaluate further whether it is sensitive to grazing, with large population numbers correspond with habitat quality.

Other Considerations:

QUERCUS MACROCARPA

Bur Oak



STATE STATUS SUMMARY

State Rank: **S1**

1 EO of large population size but many potential threats and low recruitment

Rarity:

1. *Number of Occurrences:*

There is 1 occurrence. Additional occurrences reported in the past are believed to be planted.

2. *Abundance:*

There is an estimated total of about 10,000 individuals. Known occupied habitat is about 1,200 acres.

3. *Range in Montana:*

It is a peripheral species known from Carter County. Its range just barely crosses the state border.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has relatively narrow ecological amplitude. It is the dominant or codominant species of an upland shale ridge community and of a lowland alluvial terrace community, but it does not occur outside these two highly restricted habitat types.

5. *Trend:*

Parts of the stand have been destroyed by mining and road construction. Low acorn production and seedling establishment may indicate decline in recruitment.

6. *Threats:*

The occurrence is potentially threatened by bentonite mining and associated road construction. Livestock grazing and invasions of exotic weeds potentially threaten the species by interfering with recruitment.

7. *Protection:*

A small portion of the stand is on public lands with sensitive species policies in place but this may not insure long term viability of the occurrence.

Needs:

8. *Inventory:*

More detailed mapping of the oak plant community and extent of individuals.

9. *Protection:*

1 in MT.

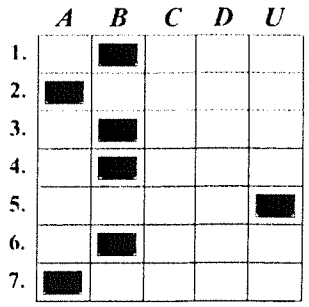
10. *Management:*

Withdraw from minerals development. Compare recruitment in different range conditions to develop grazing guidelines.

Other Considerations:

RANUNCULUS CARDIOPHYLLUS

Heart-leaved Buttercup



STATE STATUS SUMMARY

State Rank: **S2**

8 EOs; potentially impacted by livestock grazing

Rarity:

1. *Number of Occurrences:*

There are 8 occurrences.

2. *Abundance:*

An estimated total of about 1,000 individuals have been observed. Total known occupied habitat is less than 50 acres.

3. *Range in Montana:*

It is a peripheral species known from Glacier, Sweetgrass, and Toole counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a wet meadow species, possibly more restricted in hydrology and plant community type.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Habitat of many occurrences is threatened by invasions of exotic grasses and the species is potentially threatened by livestock grazing.

7. *Protection:*

One occurrence is in Glacier National Park on the edge of a developed area (Ranger Station) and all others are on private or tribal lands.

Needs:

8. *Inventory:*

Baseline inventory is needed in Glacier and Toole counties.

9. *Protection:*

At least 1 occurrence in MT.

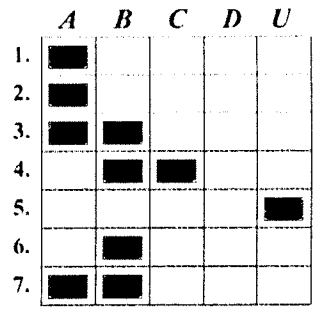
10. *Management:*

Determine whether livestock are using species' habitat at time of flowering and seedset.

Other Considerations:

RANUNCULUS PEDATIFIDUS

Northern Buttercup



STATE STATUS SUMMARY

State Rank: **S1**

5 EOs including 1 historic; potentially impacted by livestock grazing and exotic species invasion at some sites

Rarity:

1. ***Number of Occurrences:***

There are 5 occurrences. One is based on a 1894 collection with imprecise location data.

2. ***Abundance:***

Estimated numbers are low or the species is described as occasional or uncommon, except at one site where it is widely distributed in a single large wet meadow opening.

3. ***Range in Montana:***

It is a disjunct boreal species known from Flathead, Glacier, Granite, Liberty, and Toole counties. Occurrences with known location are in the Anaconda Range, Glacier National Park, and the Sweetgrass Hills. It is also reported from Cascade Co. (Lesica and Shelly 1991) - no known vouchers.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a species of relatively broad ecological amplitude, occurring in a number of contrasting community types in different landscape settings over a broad elevational range.

5. ***Trend:***

No unequivocal evidence concerning trends is available. Occupied area of a couple occurrences might have been reduced by invasions of exotic weeds.

6. ***Threats:***

A couple of occurrences are potentially threatened by invasions of exotic weeds fostered by livestock grazing.

7. ***Protection:***

One occurrence is at a high elevation in Glacier Park, two occurrences are near the boundary of and may or may not be on public lands with sensitive species policies in place, and a fourth occurrence is on public lands without sensitive species policies in place.

Needs:

8. ***Inventory:***

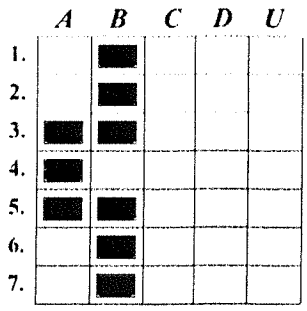
9. ***Protection:***

10. ***Management:***

Other Considerations:

SALIX SERISSIMA

Autumn Willow



STATE STATUS SUMMARY

State Rank: **S2**

9 EOs; potentially threatened by water management practices.

Rarity:

1. *Number of Occurrences:*

There are 9 occurrences, but 4 are in close proximity and may merit merging into fewer occurrences. A 10th occurrence from Glacier National Park, belived extirpated, is reported in Lesica and Shelly (1991) - no known voucher.

2. *Abundance:*

There is an estimated total of 2,400-7,000 individuals. Number of genets may be less due to clonal reproduction.

3. *Range in Montana:*

It is a peripheral species known from Glacier, Meagher, and Teton counties. The sites are along the Rocky Mountain Front and in the Smith River drainage.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species has high fidelity to fen and carr habitat which comprises a small percentage of the landscape.

5. *Trend:*

An occurrence in Glacier Park is believed extirpated and habitat has been reduced at another site.

6. *Threats:*

Habitat is potentially threatened by activities which alter hydrology, such as water diversion, damming, or destruction of beaver dams. The species is potentially threatened by browsing by game and livestock.

7. *Protection:*

One occurrence is protected in the Pine Butte Swamp Preserve, but all others are on private, state, or tribal lands where sensitive species policies are not in place.

Needs:

8. *Inventory:*

Baseline survey is needed throughout range from the Rocky Mountain Front to the upper Smith River.

9. *Protection:*

At least 1 in MT.

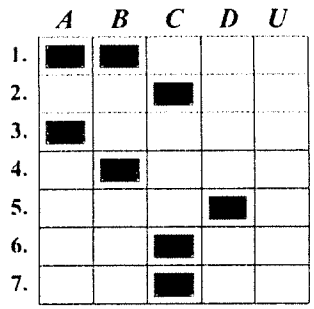
10. *Management:*

Vulnerable to water table changes and grazing.

Other Considerations:

SCIRPUS CYPERINUS

Wool Grass



STATE STATUS SUMMARY

State Rank: **S3**

5 EOs and several reports from Noxon Reservior where it is common; possibly adventive

---

Rarity:

1. ***Number of Occurrences:***

   There are 5 documented occurrences, and an undetermined number of additional reports.

2. ***Abundance:***

   It is locally common around Noxon Reservoir.

3. ***Range in Montana:***

   It is a peripheral species known from Lincoln, Missoula, and Sanders counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   The species has a relatively narrow ecological amplitude. It is an obligate hydrophyte, but is adapted to fluctuating water levels, and large contiguous areas of habitat have been created by damming.

5. ***Trend:***

   Most occurrences are in habitat increased or created by impoundment of the Clark Fork River. The species is probably adventive and increasing in the state.

6. ***Threats:***

   The species is not threatened by current management practices.

7. ***Protection:***

   A couple of occurrences are on public land, and the species is not deemed in need of protection.

Needs:

8. ***Inventory:***

   Inventory is needed only if there is challenge to the deduction that the species habitat needs are met in man-made reservoirs.

9. ***Protection:***

   None identified.

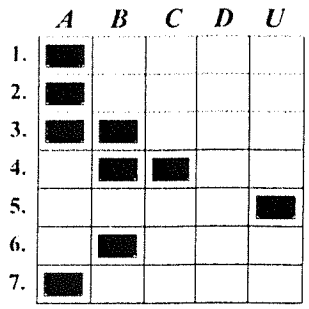
10. ***Management:***

    None identified.

Other Considerations:

SOLIDAGO SPARSIFLORA

Few-flowered Goldenrod



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs including 1 historic; potentially impacted by plowing and grazing

---

Rarity:

1. *Number of Occurrences:*

There are 2 occurrences. One is based on a 1942 collection and the other is based on a 1980 collection with vague location data.

2. *Abundance:*

It was described as frequent at one site in 1942. No information on abundance is available for the other occurrence.

3. *Range in Montana:*

It is a peripheral species known from Garfield and Stillwater Counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

The species is likely to have a relatively broad ecological amplitude judging from its occurrence in sagebrush grassland and on the edge of a grainfield.

5. *Trend:*

No information on trends is available. The occurrences have not been relocated.

6. *Threats:*

One occurrence on the edge of a grainfield (1942), if still viable, is potentially threatened by expanded cultivation and pesticide spraying.

7. *Protection:*

Precise locations and land ownership of the occurrences are unknown.

Needs:

8. *Inventory:*

Systematic inventory is needed throughout range.

9. *Protection:*

At least 1 in MT.

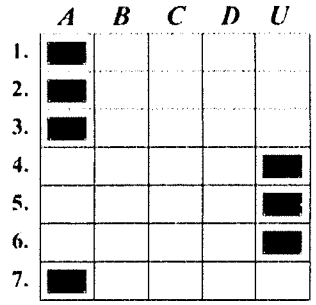
10. *Management:*

Determine natural or unnatural succession taking place in species' habitat and its influence on habitat suitability.

Other Considerations:

SPHENOPHOLIS INTERMEDIA

Slender Wedgegrass



STATE STATUS SUMMARY

State Rank: **SH**

1 historic EO

Rarity:

1. *Number of Occurrences:*

There is one occurrence based on collections from 1898 and 1905.

2. *Abundance:*

No information on abundance is given on the collection label. The species is presumed sparse based on lack of observations.

3. *Range in Montana:*

It is a globally sparse species known from Gallatin County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Almost nothing in known about habitat of the occurrence.

5. *Trend:*

The occurrence has not been relocated since 1905. It is an annual species and its populations may be prone to fluctuations in numbers, possibly leading to extinction.

6. *Threats:*

No information on threats is available. This wetland grass is considered a decreaser under grazing.

7. *Protection:*

The precise location and land ownership of the occurrence is unknown.

Needs:

8. *Inventory:*

Survey in Gallatin Co., pursue annotation of all Sphenopholis specimens from MT.

9. *Protection:*

At least 1 in MT if extant.

10. *Management:*

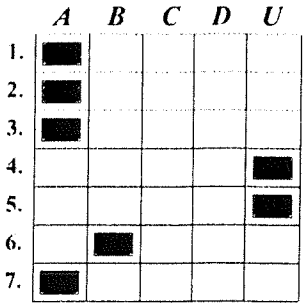
None identified.

Other Considerations:

There are a large number of specimens of SPHENOPHOLIS OBTUSATA in Montana herbaria, which are in need of annotation. SPHENOPHOLIS INTERMEDIA is sometimes considered a variety of that species. Misinterpretations of synonymy have resulted in much higher accounts of the species' abundance and distribution in the state.

SPOROBOLUS ASPER

Longleaf Dropseed



STATE STATUS SUMMARY

State Rank: **SU**

2 EOs including 1 historic; undetermined status pending native origin

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Rarity:

1. *Number of Occurrences:*

There are 2 occurrences, based on specimens collected in 1939 and 1957.

2. *Abundance:*

No information on abundance is given on the collection labels. The species is presumed sparse based on lack of observations.

3. *Range in Montana:*

It is a peripheral species known from Carter and Custer Counties; also reported from Powder River County.

Threats and Vulnerability:

4. *Ecological Amplitude:*

Nothing is known about habitat of one occurrence, and little about the other.

5. *Trend:*

The occurrences have not been relocated in initial efforts.

6. *Threats:*

The occurrence at an agriculture and range experiment station may be affected by livestock grazing and herbicide spraying.

7. *Protection:*

The occurrences are probably on public lands, but precise locations are unknown, and sensitive species policies are not in place.

Needs:

8. *Inventory:*

Further efforts to relocate the species in the Fort Keogh Range Experiment Station are needed.

9. *Protection:*

To be determined.

10. *Management:*

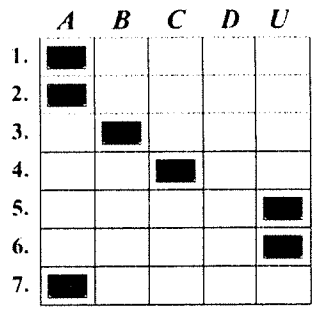
To be determined.

Other Considerations:

Both collection sites are settings that had a history of intense grazing, raising the question whether the species was introduced by or otherwise associated with livestock grazing.

SPOROBOLUS NEGLECTUS

Small Dropseed



STATE STATUS SUMMARY

State Rank: **SU**

4 EOs including 3 historic.

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences. Three are based on specimens collected in 1941 and 1927.

2. *Abundance:*

It was described as locally common in 1992 at one site, but as rare at one historical site. No data are available for the other occurrences.

3. *Range in Montana:*

It is a peripheral species known from Gallatin, Sanders, and Wheatland counties. Occurrences are in the Gallatin and Musselshell River drainages east of the Continental Divide and along the Flathead River west of the Divide.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with low habitat fidelity and may be most adapted to areas which are disturbed, whether by human activity or by natural processes.

5. *Trend:*

Occurrences have not been relocated. It is an annual and populations, especially small ones, may be short-lived and/or transient.

6. *Threats:*

Historical occurrence at an experimental farm, if still extant, is potentially affected by station activities. Occurrence at a railroad crossing may indicate that it favors disturbance or is adventive.

7. *Protection:*

One occurrence is on public land at an experiment station (possibly historical) but precise location is unknown. All others are on private or tribal land and/or their precise location is unknown.

Needs:

8. *Inventory:*

Relocate known records and evaluate its requirement for natural habitat.

9. *Protection:*

To be determined.

10. *Management:*

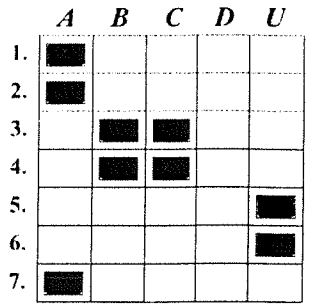
To be determined.

Other Considerations:

2 of 4 collections are from disturbed habitat.

STELLARIA CRASSIFOLIA

Fleshy Stitchwort



STATE STATUS SUMMARY

State Rank: **S1**

4 EOs; those below alpine potentially affected by grazing.

Rarity:

1. *Number of Occurrences:*

There are 4 occurrences.

2. *Abundance:*

Collection label data on abundance ranges from "a single plant" to "abundant", or no information is given.

3. *Range in Montana:*

It is a disjunct circumboreal species known from Beaverhead, Carbon, Deer Lodge, and Sanders counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively broad ecological amplitude with adaptation conditioned by compensating environmental factors. It is known from a variety of habitats and contrasting settings, from low to middle elevation riparian zones, to rodent disturbed alpine meadows.

5. *Trend:*

The species was relocated in 1991 in the general vicinity of a 1953 collection, but available data are not reliable evidence of trends. No other occurrence has been relocated.

6. *Threats:*

No information on threats is available. Its habitat often lies within riparian corridors; subject to intensified livestock use.

7. *Protection:*

Three occurrences are on public lands but sensitive species policies are not in place.

Needs:

8. *Inventory:*

Systematic survey is needed throughout known range.

9. *Protection:*

At least 1 in MT.

10. *Management:*

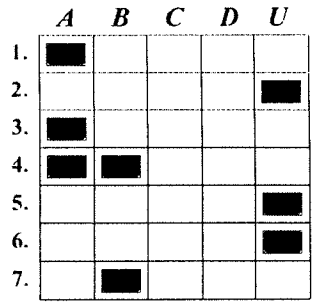
To be determined.

Other Considerations:

The species belongs to a difficult and under-collected genus, and considering its rather broad range and ecological amplitude, it is likely to be more common than records indicate.

STELLARIA JAMESIANA

James Stitchwort



STATE STATUS SUMMARY

State Rank: **S1**

2 EOs from limited area.

Rarity:

1. ***Number of Occurrences:***

   There are 2 occurrences.

2. ***Abundance:***

   No information on abundance is available, but likely to be low based on few occurrences.

3. ***Range in Montana:***

   It is a peripheral species known from Beaverhead County, in the Centennial Mountains.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species of relatively narrow ecological amplitude. The two sites are moist woodlands with aspen, possibly seral communities.

5. ***Trend:***

   No information on trends is available.

6. ***Threats:***

   No information on threats is available.

7. ***Protection:***

   Both occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

   Systematically inventory in Centennial Mtns.

9. ***Protection:***

   At least 1 in MT.

10. ***Management:***

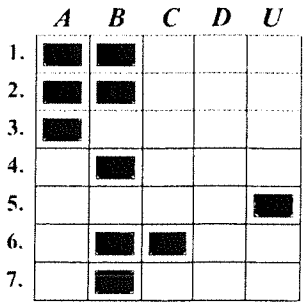
    Evaluate response to logging if it is in logging management units, and to fire.

Other Considerations:

Alternate taxonomy based on reproductive characters places this species in its own monotypic genus, increasing concern for its conservation.

STEPHANOMERIA SPINOSA

Spiny Skeletonweed



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs including 1 historic; potentially impacted by noxious weed invasion and habitat loss with subdivisions.

Rarity:

1. *Number of Occurrences:*

There are 6 occurrences, but one is based on a historical (1900) collection possibly from the same general area as recently surveyed occurrences, and two others are based on older (1933, 1952) collections and their current viability is unknown.

2. *Abundance:*

There are two large and extensive populations, but the species was described as rare or widely scattered at all sites with data.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead and Madison Counties. All occurrences but one are from the Madison River Valley and the single site in the upper Centennial Valley is based on a 1952 roadside collection.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively narrow ecological amplitude, occurring in an extensive and contiguous plant community type on alluvial benches along the Madison River, but restricted by a localized, extremely arid climate.

5. *Trend:*

Unknown.

6. *Threats:*

Habitat is often subject to livestock grazing, but the species does not appear to be adversely effected except in extreme cases or marginal habitat. The species is potentially threatened by encroachment of its habitat by exotic weeds, and more direct affects of subdivision development.

7. *Protection:*

Three occurrences, including the two largest populations, are on public lands with sensitive species policies in place.

Needs:

8. *Inventory:*

Systematically survey throughout range.

9. *Protection:*

At least 1 in MT.

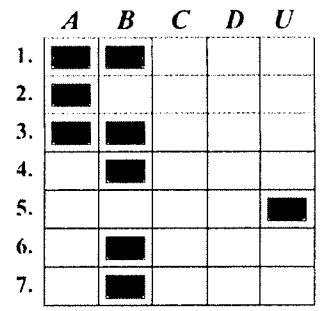
10. *Management:*

Control the spread of knapweed at the Madison Valley occurrences.

Other Considerations:

TARAXACUM ERIOPHORUM

Rocky Mountain Dandelion



STATE STATUS SUMMARY

State Rank: **S1**

6 EOs including 1 historic; potentially impacted by grazing.

Rarity:

1. ***Number of Occurrences:***

There are 6 occurrences, but one is based on a 1892 collection with imprecise location, and two others are in close proximity and may merit merging.

2. ***Abundance:***

One occurrence was described as extensive and another has an estimated thousands of individuals, but the species is less abundant at other sites.

3. ***Range in Montana:***

It is known from Beaverhead, Granite, and Madison counties.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is a species with low habitat specificity restricted to moist sites in the semi-arid high valleys but extending up to the alpine in rocky turf.

5. ***Trend:***

No occurrences have been revisited.

6. ***Threats:***

Habitat of some occurrences is threatened by livestock trampling and by invasions of exotic weeds.

7. ***Protection:***

Two occurrences in close proximity are on public lands with sensitive species policies in place, but long-term viability is not insured. Other occurrences are on private lands or public lands without sensitive species policies in place.

Needs:

8. ***Inventory:***

Systematic survey is needed throughout its range. The historic Sheridan record may reflect that its elevation range extends to valleybottoms under some conditions.

9. ***Protection:***

At least 1 in MT.

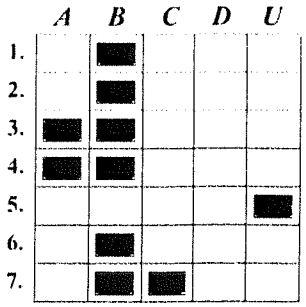
10. ***Management:***

Reduce or eliminate the trampling affects of grazing early in the growing season.

Other Considerations:

THALICTRUM ALPINUM

Alpine Meadowrue



STATE STATUS SUMMARY

State Rank: **S2**

10 EOs; potentially impacted by water use practices, grazing, and exotic species invasion.

Rarity:

1. *Number of Occurrences:*

There are 10 occurrences.

2. *Abundance:*

There is an estimated total of 15,000-33,000 individual stems, but number of genets may be considerably less due to spread by rhizomes. Total known occupied habitat is about 12 acres.

3. *Range in Montana:*

It is a disjunct circumpolar species known from Beaverhead Deerlodge and Granite Counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively narrow ecological amplitude found in a few highly restricted wetlands, but these are in both forest and steppe settings and apparently they may have either alkaline or acidic substrates.

5. *Trend:*

The species was first documented in the state in 1987 and no occurrence has been revisited.

6. *Threats:*

Habitat of most occurrences is potentially threatened by alteration of hydrology and trampling, and potentially by invasions of exotic weeds, as fostered by livestock grazing and watering.

7. *Protection:*

All but two occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. *Inventory:*

Survey is incomplete on surrounding private lands.

9. *Protection:*

At least 1 in MT.

10. *Management:*

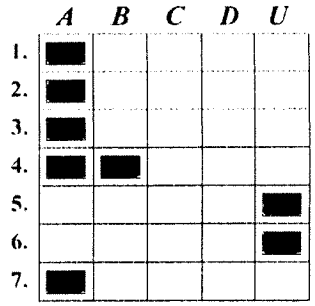
Avoid early-season grazing and hydrologial change.

Other Considerations:

THELYPODIUM PANICULATUM

Northwestern Thelypody

STATE STATUS SUMMARY



State Rank: **SH**

1 historic EO.

Rarity:

1. ***Number of Occurrences:***

There is 1 occurrence based on a collection from 1899.

2. ***Abundance:***

No information on abundance is given on the specimen label, but the species is presumed scarce due to lack of observations.

3. ***Range in Montana:***

It is a regional endemic species known from Beaverhead County. It is also reported from Madison County (Dorn 1984) - no known vouchers.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

It is presumed to have narrow ecological amplitude because it is known from just one site, however potential "boggy flat" habitat in the vicinity of the collection may extend across multiple sections.

5. ***Trend:***

The occurrence has not been relocated.

6. ***Threats:***

No information on threats is available. It occupies wet meadow habitat and may be affected by grazing and changes to hydrology in some form.

7. ***Protection:***

The precise location and land ownership of the occurrence are not known.

Needs:

8. ***Inventory:***

Systematically survey in the Alaska Basin area and the east end of the Centennial Valley is needed.

9. ***Protection:***

At least 1 in MT if extant.

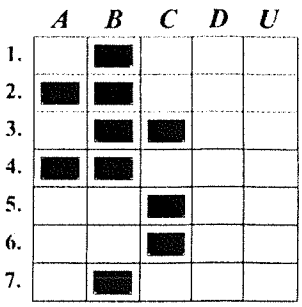
10. ***Management:***

To be determined.

Other Considerations:

TOWNSENDIA CONDENSATA

Cushion Townsendia



STATE STATUS SUMMARY

State Rank: **S2**

9 EOs including 1 historic; no imminent threats.

Rarity:

1. *Number of Occurrences:*

There are 9 occurrences. Three are based on specimens collected in 1957 or before.

2. *Abundance:*

The species was variously described as "uncommon," "common," and "abundant in a small area." The only occurrence with data had an estimated 500 individuals and 80 acres of occupied habitat, but it was not completely surveyed. Most known Montana populations of this species are small.

3. *Range in Montana:*

It is a regional endemic species known from Beaverhead, Glacier, Madison, and Park counties. It occurs at high elevations in several mountain ranges.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species with relatively narrow ecological amplitude. It is restricted to some of the highest elevations in the state but grows in substrates with a variety of parent materials.

5. *Trend:*

No occurrences have been revisited, but it is likely to be stable due to its pristine alpine habitat.

6. *Threats:*

The species occupies high elevation, rocky habitat that faces no known direct threats, but possible indirect or long-term threats as with global warming.

7. *Protection:*

Three occurrences are in Glacier National Park, one is on public lands with sensitive species policies in place, and all others are on public lands without sensitive species policies in place.

Needs:

8. *Inventory:*

Systematic survey is needed throughout range.

9. *Protection:*

At least 1 in MT; consider adequacy of current protection.

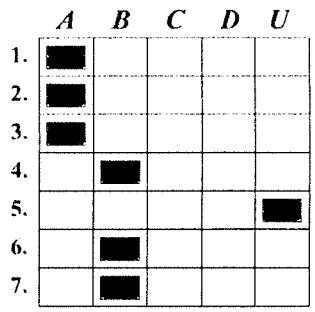
10. *Management:*

None identified.

Other Considerations:

TOWNSENDIA FLORIFER

Showy Townsendia



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs; potentially affected by grazing.

Rarity:

1. *Number of Occurrences:*

There are 3 occurrences.

2. *Abundance:*

Estimated total individuals observed is less than 100. Total known occupied habitat may be less than 10 acres.

3. *Range in Montana:*

It is a peripheral species known from Beaverhead and Madison Counties. It is restricted to a small area near the boundary between the two counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of moderate ecological amplitude, occurring in a few different plant communities, but restricted to bare soil patches in valley settings which often receive concentrated use by livestock.

5. *Trend:*

The species was first documented in the state in 1985 and only one occurrence has been revisited. A slight increase in reported numbers at this site may be due to increased survey intensity.

6. *Threats:*

Early grazing or intense grazing at any time is likely to be detrimental to the species.

7. *Protection:*

One occurrence is on public land with sensitive species policies in place but this may not insure its long term viability. The other occurrences are on private land or precise location and land ownership are unknown.

Needs:

8. *Inventory:*

Systematic survey is needed in foothills above Jefferson River tributaries.

9. *Protection:*

At least 1 in MT.

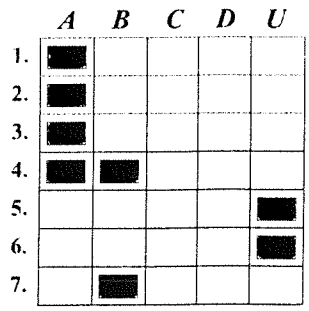
10. *Management:*

Avoid early or intense grazing.

Other Considerations:

VERATRUM CALIFORNICUM

California False-hellebore



STATE STATUS SUMMARY

State Rank: **S1**

3 EOs from a single drainage; potentially affected by land management practices

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Rarity:

1. ***Number of Occurrences:***

   There are 3 occurrences.

2. ***Abundance:***

   An estimated total of fewer than 1000 individual stems have been observed. Number of genets is probably much less due to spread by rhizomes.

3. ***Range in Montana:***

   It is a peripheral species known from Granite County. All occurrences are in a single creek drainage on the northwest flank of the Anaconda Range. Previous reports from Meeagher Co. were based on misidentified specimens; specimens from Gallatin Co, and reports from Lewis and Clark cos. (Lesica and Shelly 1991) need verification.

Threats and Vulnerability:

4. ***Ecological Amplitude:***

   It is a species of relatively narrow ecological amplitude, restricted to wet meadow and open forest habitats in a narrow elevational zone.

5. ***Trend:***

   One occurrence was revisited twice, documenting persistence at the site for over 20 years, but other information on trends is lacking.

6. ***Threats:***

   Habitat is potentially impacted by livestock grazing, but effects on the species are unknown. One occurrence is potentially threatened by trail construction.

7. ***Protection:***

   All occurrences are on public lands with sensitive species policies in place, but this may not insure their long-term viability.

Needs:

8. ***Inventory:***

   None identified.

9. ***Protection:***

   At least 1 in MT.

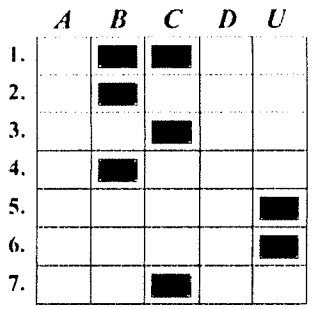
10. ***Management:***

    Avoid trail impacts and minimize local livestock use.

Other Considerations:

VIOLA RENIFOLIA

Kidney-leaf White Violet



STATE STATUS SUMMARY

State Rank: **S3**

Over 45 EOs from 8 counties; potentially vulnerable.

Rarity:

1. *Number of Occurrences:*

There are over 45 occurrences not all of which have been entered, pending status review. A couple are based on collections from 1903. Others are part of high concentrations of occurrences in Flathead County that may warrant merging.

2. *Abundance:*

Information has been summarized on less than half of the occurrences, for which there is an estimated total of 2,600-5,000 or more individuals, but it typically occupies small bands of habitat, so that total known occupied habitat for this subset of occurrences may be less than 50 acres.

3. *Range in Montana:*

It is known from Flathead, Glacier, Jefferson, Lake, Lincoln, Missoula, Silver Bow, and Teton counties.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively narrow ecological amplitude. Across its range in the state it occurs in several community types, but it is usually restricted to narrow zones along an ecotone or moisture gradient.

5. *Trend:*

No information on trends is available.

6. *Threats:*

Settings of many occurrences are in timber harvest units. While the effects of logging on the species have not been documented, some occurrences are in areas that were logged in the past, suggesting potential long-term resiliency of populations or the capacity to recolonize.

7. *Protection:*

Many occurrences, including the largest, are on public lands with sensitive species policies in place, and several more are in Glacier National Park. Some of the species' habitat may fall within riparian zone management guidelines.

Needs:

8. *Inventory:*

Continue documenting species' occurrences incidental to other fieldwork.

9. *Protection:*

None identified.

10. *Management:*

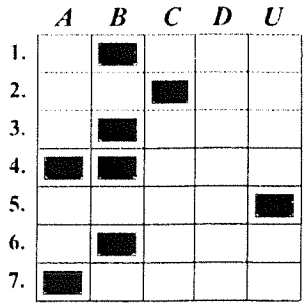
Document all direct/indirect evidence of species' response to logging. Remove from the watch list if it is not adversely affected.

Other Considerations:

The species has a short flowering period and vegetatively resembles other species; it may be more common than records indicate.

WOLFFIA COLUMBIANA

Columbia Water-meal



STATE STATUS SUMMARY

State Rank: **S2**

7 EOs; potentially affected by management practices affecting water quality

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Rarity:

1. *Number of Occurrences:*

There are 7 occurrences.

2. *Abundance:*

Estimated total is greater than 20,000 individuals, but number of genets is probably much less due to vegetative reproduction. Total known occupied habitat may be less than 200 acres.

3. *Range in Montana:*

It is known from Flathead, Lake, Missoula, and Ravalli counties. Occurrences are in the Bitterroot, Clarks Fork, and Flathead river valleys.

Threats and Vulnerability:

4. *Ecological Amplitude:*

It is a species of relatively narrow ecological amplitude, restricted to shallow aquatic habitats that are widely scattered and comprise a very small portion of the landscape within the species range.

5. *Trend:*

No information on trends is available.

6. *Threats:*

The species is potentially threatened by management activities on private lands which could affect aquatic habitat. Specific threats include agricultural runoff leading to pond eutrophication and herbicide aquatic weed control.

7. *Protection:*

All occurrences are on private or tribal lands or on public lands without sensitive species policies in place.

Needs:

8. *Inventory:*

Systematic survey is needed throughout range.

9. *Protection:*

At least 1 in MT; review adequacy of current protection.

10. *Management:*

Avoid aquatic weed herbicides and buffer from agricultural runoff.

Other Considerations:

This species may be more common than records indicate because it is inconspicuous and much potential habitat is on private lands which have not been surveyed.

Table 1.

BLM SPECIAL STATUS SPECIES[1] - RECOMMENDATIONS[2]

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Adoxa moschatellina Musk-root	G5 S1	Watch	Delete	Not known from BLM lands; the historic Basin record might correspond with the recently documented FS population.
Agastache cusickii Cusick's Horse-mint	G3G4 S1	Sensitive	Sensitive	Affected by road maintenance and unauthorized quarrying.
Ambrosia acanthicarpa Flat-spine Bursage	G5 S4	Watch	Delete	Increases under grazing.
Amerorchis rotundifolia Round-leaved Orchis	G5 S2S3	Watch	Watch	Potentially affected by logging and grazing.
Arabis demissa var languida Daggett Rock Cress	G5T4 S1	Watch	Watch	Recent addition to state flora; more status information needed; evaluation is in progress under Bighorn Canyon NRA project.
Arabis fecunda Sapphire Rockcress	G2 S2	Sensitive	Sensitive	State endemic affected by noxious weeds and potentially affected by grazing and recreation. BLM administers a significant number of EO sites.
Asclepias ovalifolia Ovalleaf Milkweed	G5? S1	Watch	Delete	Not known from BLM lands.
Asclepias stenophylla Narrowleaf Milkweed	G4G5 S1	Watch	Watch	Potentially affected by grazing.
Astragalus aretioides Sweetwater Milkvetch	G4 S2	Watch	Watch	Potentially affected by grazing.
Astragalus barrii *Barr's Milkvetch*	G3 S3	Watch	Watch	Potentially affected by oil and gas development; evaluation is in progress under Powder River project.
Astragalus ceramicus var apus Painted Milkvetch	G4T3 S1	Sensitive	Sensitive	Early succession species that requires striking a management "balance" in disturbance. Only known in MT from 1 occurrence, on BLM lands.
Astragalus convallarius var convallarius Lesser Rushy Milkvetch	G5T5 S2	Watch	Watch	Potentially affected by leafy spurge invasion and subdivision development.
Astragalus geyeri var geyeri Geyer's Milkvetch	G4?T4? S2	Sensitive	Watch	Potentially but not demonstrably affected by grazing.

[1] This includes all plant special status species identified in 1996 by the Montana Office of the Bureau of Land Management for districts in Montana. It also includes Montana plant species of special concern that were documented on BLM lands since 1996.
[2] Recommendations are based on the current BLM definition for sensitive, with modification that if a species is restricted to BLM lands in MT, and known only from 1-2 occurrences, it may also warrant consideration as sensitive. If a species is not known from BLM lands, it is automatically recommended for deletion. Note: All of these recommendations are predicated on the assumption that expanded guidelines and processes for BLM special status species policy will be developed particularly as potential threats are documented or refuted, and as a process for status review involving the BLM state office and field offices is developed

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Astragalus oreganus Wind River Milkvetch	G4? S1	Watch	Watch	Potentially affected by exotic species invasion.
Astragalus racemosus var longisetus Raceme Milkvetch	G5T4 S2	Watch	Watch	Potentially affected by grazing.
Astragalus scaphoides Bitterroot Milkvetch	G3 S2	Sensitive	Sensitive	Affected by grazing if intense or if rotation is not part of allotment plan.
Astragalus terminalis Railhead Milkvetch	G3 S2	Sensitive	Sensitive	Affected by grazing, at least in lower elevations.
Atriplex truncata Wedge-leaved Saltbush	G5 SH	Watch	Delete	Not known from BLM lands.
Bacopa rotundifolia Roundleaf Water-hyssop	G5 S1	Watch	Delete.	Collected in the vicinity of BLM lands; precise location unknown.
Balsamorhiza macrophylla Large-leafed Balsamroot	G3G5 S1	Watch	Watch	Potentially affected by grazing.
Bidens comosa Threelobed Beggarticks	G5 SU	Watch	Delete	More widespread than previously known.
Bidens vulgata var schizantha Tall Bur-marigold	G5T? SU	Watch	Delete	Not known from BLM lands
Camissonia andina Obscure Evening-primrose	G4 S1	Sensitive	Watch	Potentially affected by grazing and weed invasion.
Camissonia parvula Small Camissonia	G4 S1	Sensitive	Sensitive	Potentially affected by grazing. Only known from 2 occurrences, on BLM lands.
Carex crawei Craw's Sedge	G5 S2	Sensitive	Sensitive	Potentially affected by grazing at one small BLM tract.
Carex eburnea Ivory Sedge	G5 SU	Watch	Delete	Not known from BLM lands.
Carex gravida var gravida Pregnant Sedge	G5T? S1	Watch	Delete	Not known from BLM lands.
Carex multicostata Many-ribbed Sedge	G5 S1	Watch	Delete	Not known from BLM lands.
Carex occidentalis Western Sedge	G4 SH	Watch	Delete	Not known from BLM lands.
Carex parryana ssp idahoa Idaho Sedge	G4T2 S2	Sensitive	Sensitive	Affected by grazing.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Carex torreyi Torrey's Sedge	G4 S3	Watch	Delete	More widespread than previously known; though not known from BLM lands. Affected by grazing.
Castilleja gracillima Slender Indian Paintbrush	G3G4 S2	Watch	Delete	Not occurring on BLM lands.
Castilleja pilosa var longispica Parrot-head Indian Paintbrush	G4?T4 S3	Watch	Delete	Locally common.
Ceanothus herbaceus var pubescens New Jersey Tea	G5T? SH	Watch	Delete	Not known from BLM lands.
Celastrus scandens Bittersweet	G5 S1	Watch	Delete	Not known from BLM lands.
Centunculus minimus Chaffweed	G5 S1	Watch	?	Not known from BLM lands, but possibly part of same allotment.
Cercocarpus montanus var glaber Birchleaf Mountain-mahogany	G5TU S1	Watch	Delete	Not known from BLM lands.
Chenopodium subglabrum Smooth Goosefoot	G3G4 S1	Watch	Watch	Early succession species that may require striking a management "balance" in disturbance.
Chrysothamnus linifolius Lineleaf Rabbitbrush	G5 S3	Watch	Delete	Locally common.
Cleome lutea Yellow Bee Plant	G5 S1	Watch	Watch	Potentially affected by grazing.
Conioselinum scopulorum Hemlock Parsley	G4 SRF	Watch	Delete	Not in Montana.
Cryptantha fendleri Fendler Cat's-eye	G4 S1	Watch	Watch	Early succession species potentially affected by grazing.
Cryptantha humilis Cryptantha	G4? SH	Watch	?	Not known from BLM lands, though 1 historic record is in the vicinity.
Cryptantha scoparia Miner's Candle	G3 S1	Sensitive	Sensitive	Only known from 1 occurrence, on BLM lands.
Cyperus acuminatus Short-pointed Flatsedge	G5 S1	Watch	Delete	Not known from BLM lands.
Cyperus schweinitzii Schweinitz' Flatsedge	G5 S2	Watch	Watch	Early succession species that may require striking a management "balance" in disturbance.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Cypripedium parviflorum Small Yellow Lady's-slipper	G5 S3	Watch	Watch	Potentially affected by logging and grazing.
Dalea enneandra Nine-anther Dalea	G5 S1	Watch	Delete	Not known from BLM lands.
Dalea villosa var villosa Silky Prairie Clover	G5T? S1	Watch	?	Not known from but adjoins BLM lands.
Dichanthelium oligosanthes var scribnerianum Scribner's Panic Grass	G5T5 S1	Watch	Delete	Not known from BLM lands.
Downingia laeta Great Basin Downingia	G5 S1	Watch	Delete	Not known from BLM lands.
Draba globosa Round-fruited Draba	G3 S1	Watch	Delete	Not known from BLM lands.
Eleocharis rostellata Beaked Spikerush	G5 S2	Watch	-	Not known from BLM lands.
Elodea longivaginata Long Sheath Waterweed	G4G5 S1	Watch	Watch	Potentially affected by grazing.
Elymus flavescens Sand Wildrye	G4 S1	Sensitive	Sensitive	Early succession species that requires striking a management "balance" in disturbance.
Epipactis gigantea Giant Helleborine	G4 S2	Watch	Delete	Not known from BLM lands.
Erigeron asperugineus Idaho Fleabane	G4 S1	Watch	Delete	Not known from BLM lands.
Erigeron formosissimus var viscidus Beautiful Fleabane	G5T4 S1	Watch	Delete	Not known from BLM lands.
Erigeron linearis Linearleaf Fleabane	G5 S1	No status	Watch	Potentially threatened by leafy spurge invasion.
Eriogonum salsuginosum Smooth Buckwheat	G4? S1	Sensitive	Sensitive	Only known from 1 occurrence on BLM lands.
Eriogonum visheri Visher's Buckwheat	G3 S1	No status	Sensitive	Potentially affected by grazing insofar as weeds increase. Only known from 1 occurrence, on BLM lands.
Eupatorium maculatum var bruneri Joe-pye Weed	G5TU S2	Watch	Delete	Not known from BLM lands.
Eustoma grandiflorum Showy Prairie-gentian	G5 S1	Watch	Delete	Not known from BLM lands.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Gentianopsis macounii Macoun's Gentian	G5 S1	Watch	Delete	Not known from BLM lands.
Gentianopsis simplex Hiker's Gentian	G4 S1	Watch	Delete	Not known from BLM lands.
Grayia spinosa Spiny Hopsage	G5 S2	Watch	Watch	Potentially affected by grazing developments if not grazing.
Halimolobos virgata Twiggy Halimolobos	G4 S3	Watch	Delete	Increases under grazing disturbance.
Haplopappus carthamoides var subsquarrosus Beartooth Large-flowered Goldenweed	G4G5T2T3 S2	Watch	Watch	Potentially affected by grazing and fire suppression.
Hutchinsia procumbens Hutchinsia	G5 S1	Watch	Watch	Potentially affected by grazing.
Leptodactylon caespitosum Leptodactylon	G3G4 S2	Watch	Watch	Potentially affected by grazing.
Lesquerella carinata var languida Garnet Bladderpod	G3G4T1 S1	Sensitive	Sensitive	Highly restricted state endemic affected by weed invasion and grazing that fosters spread.
Lesquerella klausii Divide Bladderpod	G3 S3	Watch	?	Affected by noxious weed invasion on BLM land though relatively secure on Helena NF.
Lesquerella lesicii Lesica's Bladderpod	G1 S1	Sensitive	Sensitive	Highly restricted state endemic potentially affected by grazing.
Lesquerella pulchella Beautiful Bladderpod	G2 S2	Sensitive	Sensitive	Potentially affected by grazing and noxious weed invasion in low elevations, and by mining.
Lomatium attenuatum Taper-tip Desert-parsley	G3 S2	Sensitive	Watch	Potentially affected by noxious weed spread from adjoining private lands; and by mining. BLM manages the largest population at Bannack.
Lomatium nuttallii Nuttall Desert-parsley	G3G4 S1	Watch	Delete	Not known from BLM lands.
Lomatogonium rotatum Felwort	G5 S1	Watch	Watch	Potentially affected by grazing.
Machaeranthera commixta United Tansy-aster	G1G2 SRF	Watch	Delete	Not in Montana.
Malacothrix torreyi Desert Dandelion	G4 S1	Sensitive	Sensitive	Potentially affected by grazing; all 4 populations are on BLM lands.
Mentzelia nuda Bractless Mentzelia	G5 S1	Watch	Watch	Potentially affected by grazing.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Mentzelia pumila Dwarf Mentzelia	G4 S2	Watch	Watch	Potentially affected by grazing.
Mirabilis hirsuta Hairy Four-o'clock	G5 S3	Watch	Delete	More common than previously known, persisting under or re-establishing after disturbance.
Najas guadalupensis Guadalupe Water-nymph	G5 S1	Watch	Delete	Not known from BLM lands.
Nama densum Nama	G5 S1	Sensitive	Sensitive	Only known from 1 occurrence, on BLM lands.
Nuttallanthus texanus Blue Toadflax	G4G5 S1	Watch	Watch	Potentially affected by grazing and accompanying spread of exotics.
Oenothera pallida var idahoensis Pale Evening-primrose	G5T4Q S1	Sensitive	Sensitive	Early succession species that requires striking a management "balance" in disturbance. Only known from 1 occurrence, on BLM lands.
Oryzopsis contracta Contracted Indian Ricegrass	G3G4 S3	Watch	Delete	More widespread than previously known.
Penstemon angustifolius Narrowleaf Penstemon	G5 S2	Watch	Sensitive	Affected by grazing; potentially affected by noxious weed invasion.
Penstemon lemhiensis Lemhi Beardtongue	G3 S2	Sensitive	Sensitive	Affected by grazing, fire suppression, noxious weed invasion, and mining.
Penstemon whippleanus Whipple's Beardtongue	G5 S1	Sensitive	Watch	Potentially affected by grazing.
Phacelia incana Hoary Phacelia	G3 S2	Watch	Watch	Potentially affected by grazing and accompanying spread of weedy annuals.
Phacelia scopulina Dwarf Phacelia	G4 SH	Watch	Delete	Not known from BLM lands.
Phacelia thermalis Hot Spring Phacelia	G3G4 S1	Watch	Delete	Not known from BLM lands.
Phlox andicola Plains Phlox	G4 S2	Watch	Watch	Early succession species potentially affected by grazing.
Physaria brassicoides Double Bladderpod	G5 S1	No status	?	Status review is underway in Powder River project.
Plagiobothrys leptocladus Slender-branched Popcorn-flower	G4 S1	Watch	Delete	Not known from BLM lands.
Poa curta Short-leaved Bluegrass	G4 S1	Watch	Watch	Only known from 1 occurrence, on BLM lands.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Polygonum polygaloides White-margined Knotweed	G4G5 SU	Watch	Delete	Said to increase under disturbance.
Potentilla plattensis Platte Cinquefoil	G4 S1	Watch	Watch	Potentially affected by grazing.
Primula alcalina Idaho Primrose	G1 SX	Watch	?	Not known from BLM lands, but historical collection is in the vicinity.
Primula incana Mealy Primrose	G4G5 S2	Watch	Watch	Potentially affected by grazing.
Psilocarphus brevissimus var brevissimus Dwarf Woolly-heads	G5T? S2	Watch	Delete	Not known from BLM lands.
Psoralea hypogaea Little Indian Breadroot	G5T4 S2	Watch	Delete	More widespread than previously known, with broader habitat range and tolerance to disturbance.
Quercus macrocarpa Bur Oak	G5 S1	Sensitive	Sensitive	Affected by bentonite mining; viability affected by grazing. Only known from 1 occurrence, on BLM lands.
Ranunculus cardiophyllus Heart-leaved Buttercup	G4G5 S2	Watch	?	Not known from BLM lands though possibly in part of the same allotment.
Ranunculus pedatifidus Northern Buttercup	G5 S1	Watch	Watch	Potentially affected by grazing.
Rorippa calycina Persistent-sepal Yellow-cress	G3 S1	Watch	Delete	Not known from BLM lands.
Salix serissima Autumn Willow	G4 S2	Watch	Delete	Not known from BLM lands.
Scirpus cyperinus Wool Grass	G5 S3	Watch	Delete	Adventive.
Shoshonea pulvinata Shoshonea	G2G3 S1	Sensitive	Sensitive	Potentially affected by grazing.
Solidago sparsiflora Few-flowered Goldenrod	G? S1	Watch	Delete	Not known from BLM lands.
Sphaeromeria argentea Chicken Sage	G3? S2	Sensitive	Sensitive	Potentially affected by grazing.
Sphenopholis intermedia Slender Wedgegrass	G5 SH	Watch	Delete	Not known from BLM lands.
Spiranthes diluvialis Ute Ladies' Tresses	G2 S2	Watch	?	Relevance to BLM contingent on Piedmont Swamp status.

Name and Common Name	G Rank and S Rank	Current BLM Status	Proposed BLM Status	BLM Status Comments
Sporobolus asper Longleaf Dropseed	G5 SH	Watch	Delete	Not known from BLM lands.
Sporobolus neglectus Small Dropseed	G5 SU	Watch	Delete	Not known from BLM lands.
Stellaria crassifolia Fleshy Stitchwort	G5 S1	Watch	Delete	Not known from BLM lands.
Stellaria jamesiana James Stitchwort	G5 S1	Watch	Watch	Potentially affected by grazing.
Stephanomeria spinosa Spiny Skeletonweed	G4 S1	Watch	Watch	Potentially affected by grazing and noxious weed invasion.
Sullivantia hapemanii var hapemanii Wyoming Sullivantia	G3T3 S2	Watch	Delete	Not known from BLM lands.
Taraxacum eriophorum Rocky Mountain Dandelion	G4 S2	Sensitive	Sensitive	Affected by grazing.
Thalictrum alpinum Alpine Meadowrue	G5 S2	Sensitive	Sensitive	Affected by grazing.
Thelypodium paniculatum Northwestern Thelypody	G2G3 SH	Sensitive	?	Not known from BLM lands, though the historic record is in the area of extensive BLM acreage.
Townsendia condensata Cushion Townsendia	G4 S2	Watch	Watch	Potentially affected by grazing.
Townsendia florifer Showy Townsendia	G5 S1	Watch	Watch	Potentially affected by grazing.
Townsendia nuttallii Nuttall Townsend-daisy	G3 S3	Watch	?	Status review pending.
Veratrum californicum California False-hellebore	G5 S1	Watch	Delete	Not known from BLM lands.
Viola renifolia Kidney-leaf White Violet	G5 S3	Watch	Delete	More widespread than previously known.
Wolffia columbiana Columbia Water-meal	G5 S2	Watch	Delete	Not known from BLM lands.